सत्यमेव जयते

भारत सरकार

जल शक्ति मंत्रालय

जल संसाधन, नदी विकास और गंगा संरक्षण विभाग

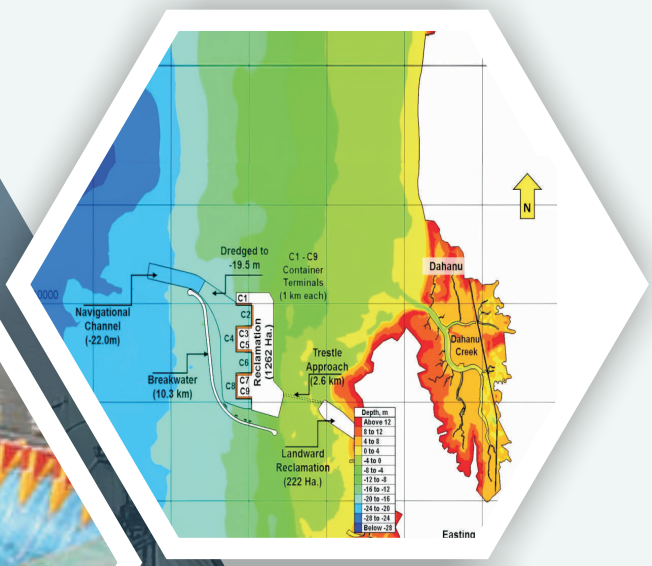
GOVERNMENT OF INDIA

MINISTRY OF JAL SHAKTI

DEPARTMENT OF WATER RESOURCES,

RIVER DEVELOPMENT & GANGA REJUVENATION

ANNUAL REPORT 2025-26



केन्द्रीय जल और विद्युत अनुसंधान शाला

CENTRAL WATER AND POWER RESEARCH STATION

Khadakwasla, Pune - 411024

GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES,
RIVER DEVELOPMENT & GANGA REJUVENATION

ANNUAL REPORT
2025-26

केन्द्रीय जल और विद्युत अनुसंधान शाला
CENTRAL WATER AND POWER RESEARCH STATION
Khadakwasla, Pune - 411024

OUR VISION

To be a world class center of excellence in research on hydraulic engineering and allied areas, which is responsive to changing global scenario and need for sustaining and enhancing excellence in providing technological solutions for optimal and safe design of water resources structures.

OUR MISSION

- To meet the country's need for basic & applied research in water resources, power sector and coastal engineering with world-class standards
- To develop competence in deployment of the latest technologies by networking with the top institutions globally, to meet the future needs for development of water resources projects in the country effectively
- To disseminate information, build skills and knowledge for capacity-building and mass awareness for optimization of available water resources

केंद्रीय जल एवं विद्युत अनुसंधान शाला
CENTRAL WATER AND POWER RESEARCH STATION

MAJOR FUNCTIONS

- Undertaking specific research studies relating to the development of water resources, power and coastal projects
- Consultancy and advisory services to Central and State Governments, private sector and other countries
- Disseminating research findings and promoting/assisting research activities in other organizations concerned with water resources projects
- Contributions to Bureau of Indian Standards and International Standards Organization
- Carrying out basic and applied research to support specific studies
- Contribution towards advancements in technology through participation in various committees at National and State Levels

CONTENTS

FROM THE DIRECTOR'S DESK

It gives me immense pleasure to bring to the fore, the major developments and activities taken place at the Central Water & Power Research Station (CWPRS), Pune, during the financial year 2025-26 through this Annual Report. The 'CWPRS Annual Report 2025-26', is a comprehensive documentation highlighting commendable contributions spanning a broad spectrum encompassing coastal protection, hydro-electric power, river training, hydraulic structures and environmental studies, amongst others.

During the financial year, CWPRS has submittedtechnical reports for 163 sponsored research studies and contributed to several strategically important projects and programs for River Engineering, Dam Safety, Hydropower, Inland watertways, Ports & Harbours and Geotechnical investigations. Notable works of CWPRS on flood mitigation for Rivers viz. Satluj, Tapi, Kosi and Nag, the intricate designs of spillways viz. Ratle, Polavaram, Pakal Dul, Kiru and the development of vital port infrastructure viz. Paradip, Mormugao, Mangalore, Mumbai and Galathea Bay (Great Nicobar) are showcase of our commitment to addressing key national challenges.

Active engagement of CWPRS in flagship program of Government of India has led to successful development of Coastal Management Information System (CMIS) for notified coastal sites. CWPRS, while disseminating the knowledge in the domain of expertise, has actively spread its research findings through publications, organising National events viz. INCHOE-2025 conference, Stakeholders' Workshop for Building Strategic Partnership, National Seminar on "Managing Aging and Distressed Hydro Power Projects: Challenges and Opportunities,PreciSense-2026 conference, delivery of trainings to a wider technical community and massive public outreach activities through physical mode as well as social-media platforms. The institutional collaborations with various Central / State Govt. Departments / PSUs / Academia / Autonomous Bodies have been enhanced by inking multiple Memoranda of Understanding (MoU). As a way ahead, CWPRS is strategically expanding its expertise into Comprehensive Dam Safety Evaluation.

The year also witnessed significant strengthening of CWPRS through modernization of infrastructure, expnasion of NABL-accredited facilities, adoption of advanced computational tools and enhancement of quality systems.

I wish to express my sincere thanks to the Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, for the steadfast support and leadership. I am also deeply grateful to our valued Clientele base pan-India and abroad for their perpetual faith in CWPRS. The talent, dedication and commitment of our Research Cadre and auxiliary staff are the key catalyst for the growth of CWPRS, and I extend my sincere appreciation to each one of them. Irrevocably, I acknowledge the enduring legacy built by my predecessors in establishing CWPRS as a centre of excellence for research in hydraulics.

A. A. Purohit

ABOUT THE INSTITUTE: AN OVERVIEW

GENERAL

The Central Water and Power Research Station (CWPRS), Pune, established in 1916 by the then Bombay Presidency as a Special Irrigation District, is the leading national hydraulic research institute under the Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation (MoJS, DoWR, RD&GR), New Delhi. In its early days of formation, this institute played important role by conducting outstanding research work for the Sukkur Barrage in Sind, the largest irrigation project in the world (1927 to 1932). Recognizing its role in the systematic study of various phases of water flow, including floods, the institution was taken over by the Government of India in 1936. With the dawn of independence and launching of planned development of water resources of the nation, CWPRS became the principal central agency to cater to the research and development (R&D) needs of hydraulics and allied disciplines for evolving safe and economical designs of hydraulic structures involved in water resources projects, River engineering, power generation and coastal engineering projects.

MANDATE

Today, as a part of the Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation (MoJS, DoWR, RD&GR), the mandate of the institution encompasses undertaking specific research studies supported by necessary basic research relating to development of water resources, power and coastal projects. Advisory and consultancy services are offered to the Central and State Governments and private sector within the sphere of its activities by participation in various expert committees. Disseminating the research findings amongst hydraulic research fraternity and promoting research activities at other institutions by imparting training to their research manpower, are also undertaken.

ORGANIZATIONAL SET-UP

CWPRS is a subordinate office of DoWR, RD&GR. The Director is the Head of the Organization designated as Head of the Department. The Additional Director monitors the overall technical activities of the office. The total sanctioned staff strength of CWPRS is 1,074. The research cadre, comprising of Director, Additional Director, Scientist-E, Scientist-D, Scientist-C, Scientist-B, Assistant Research Officer (ARO) and Research Assistant (RA) have a sanctioned strength of 251 personnel. The other supporting staff to the tune of 603 includes technical, auxiliary technical, administration, accounts and ancillary services.

CWPRS campus, situated downstream of Khadakwasla dam in South Westerly part of Pune, occupies an area of about 450 acres, where major research infrastructure available includes water re-circulation system for physical models, workshop, library, computers and communication facilities, auditorium and housing facilities. CWPRS has been recognized as the regional laboratory of the Economic and Social Commission for Asia and the Pacific (ESCAP) since 1971. The institution, with a multi-disciplinary approach to its activities, thus represents unique services available to the country and the ESCAP region.

RESEARCH ACTIVITIES

The research activities at CWPRS can be grouped into seven major disciplines as listed below.

- River Engineering
- River and Reservoir Systems Modelling
- Reservoir and Appurtenant Structures
- Coastal and Offshore Engineering
- Foundation and Structures
- Applied Earth Sciences
- Instrumentation, Calibration and Testing Services

Comprehensive R&D support is offered to a variety of projects in fields as diverse as River training and bank protection measures, hydraulic design of bridges and barrages, flood forecasting, dam break analysis, water quality analysis of River and reservoir systems, design of spillways and energy dissipators, analysis of water conductor and tail race system, optimization of the design and layout of ports and harbours suggesting coastal protection measures based on locally available materials, investigations for foundations of hydraulic structures, analysis of structures subjected to various static and dynamic loads, applied earth sciences studies for the sites of hydro-electric and other projects, calibration of current meters and flow meters, testing of pumps and turbines and instrumentation for dams.

The solutions offered by CWPRS are based on the investigations from physical and mathematical models, field investigations coupled with desk studies or from a combination of these. The institution also carries out collection and analysis of field/ prototype data on a variety of engineering, hydraulic and environmental parameters.

Some of the important projects handled during year 2025-2026 are flood protection measures along River Beas and its tributaries, Himachal Pradesh and River Poonch, J&K, reservoir sedimentation studies for Kwar and Pakal Dul HE Projects,J&K, designs of spillways and energy dissipators ofPakal Dul, Ratle and Kiru HE Project, J&K, Punatsangchhu 1 HE Project, Bhutan and Polavaram Irrigation Project in Andhra Pradesh, development of port at Galathea Bay, A&N, eastern breakwater and jetty at Porbandar, Gujarat, Paradip Port, Odisha, Mormugao Port Goa and Jawahar Dweep in Mumbai, geotechnical investigation for Sundilaa barrage, Telengana and ONGC pipeline for Godavari River in Andhra Pradesh, Site specific seismic studies for Tuichang project, Mizoram etc.

CENTRALLY SPONSORED SCHEMES

COASTAL MANAGEMENT INFORMATION SYSTEM (CMIS)

Field observed data on coastal processes is one of the essential requirements for evolving long term plans and coastal protection measures. In view of this, for collection of such data a scheme of Coastal Management Information System (CMIS) was approved by the Government of India under the on-going Scheme 'Development of Water Resource Information System (DWRIS)' of Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR). Central Water and Power Research Station (CWPRS) was awarded the work as Project Executor for implementation of CMIS at two sites viz. Satpati in Maharashtra (Northern region) and Nani Danti- Moti Danti in Gujarat (Southern region). The total cost of the project is Rs. 6.95 Crores with total duration of the work as 7 years (up to March 2026) wherein various coastal data such as wave, tide, tidal currents, shoreline and cross-shore profile, suspended and bed sediments, river /creek discharges, winds, rainfall etc. were collected. Further, this data will be processed and used at the front-end and linked to Centralized Data Centre (CDC). It is also envisaged to develop a mathematical model for these sites and design suitable coastal protection measures based on the findings. The equipment viz., detailed bathymetric survey instruments, tide gauge, marine current profiler, automatic weather station, sieve shakers, beach survey instruments, river discharge profiler, LISST for in situ sediment data and CTD meter, were procured and used for data collection at both sites

MAJOR CLIENTELE OF CWPRS

- Central Government Departments/ Agencies
- State Government Departments/ Agencies
- State Research Institutes
- Port Trusts/ State Port Organizations
- Public/ Private Sector Undertakings
- Municipal Corporations

DISSEMINATION OF KNOWLEDGE

CWPRS has disseminated the knowledge by contributing 163 Nos. of Technical Reports, 115 Nos. of Research Papers in different National & International Journals / Conferences / Seminars, conducting 30 Nos. of Training Programs for various Stakeholders, besides delivering 61Nos. of Invited Lectures etc.

E- GOVERNANCE ACTIVITIES

E-Gov facility is progressively being used in CWPRS using different modules including eOffice, eHRMS, SPARROW, GeM, eProcurement etc. Currently, about 450 e-office accounts are existing in CWPRS e-office module. All RA and above officials are having access to e-office module. All employees of CWPRS are provided with government email ids for smooth handling of various online platforms. APAR for employees of all the groups A, B and C has been brought through SPARROW.

LIBRARY AND INFORMATION SYSTEM

The Central Water and Power Research Station Library was established in 1938 with the objective of collecting and disseminating of literature on various projects on water resources, energy, coastal and hydraulic engineering etc. dealt in the organization. The library boasts an extensive collection, of 55,228 Books, Reports and Conference Proceedings, 22,464 Bound Volumes, and 382 CDs, 13,421+ online journals. During 2025-2026, the entire CWPRS Technical Report Database was migrated to the e-Granthalaya database to ensure smoother access to all information from a single platform. The System has integrated Books, Journals, Bound Volumes, Technical Reports, Online Subscribed Journals access in e-Granthalaya Library Management Software, enabling users to access the complete information of library collections via OPAC (Online Public Access Catalogue) 24x7 hours.

REPRESENTATION IN NATIONAL LEVEL / OTHER IMPORTANT COMMITTEES

Experts from CWPRS represent the institution across multiple BIS committees an actively involved in evaluation and updating of existing standards and drafting of new standards. In addition, significant contributions are also made for various standards, under ISO TC 113 Hydrometry Committee, which is of utmost relevance and essential for the integrated water resources development and its management in the country that is also the target of National Hydrology Project (NHP). CWPRS represents in various National Importance Committees of Kosi High Level Committee (KHLC), Gandak High Level Committee (GHLC), Ghaggar Standing Committee (GSC), Gangal Flood Control Commission (GFCC), National Committee on Dam Safety (NCDS), Executive committee of ICED, Coastal Protection and Development Advisory Committee, Working Group for the preparation of PFR/DPR for construction of retention structure in Lhonal Vally for GLOF Risk Mitigation Research Committee of the Ministry of Ports, Shipping and Waterways, Govt. of India, assistance to NDSA etc.

PROGRESSIVE USE OF HINDI IN OFFICIAL WORK

केन्द्रीय जल आयोग मुख्यालय में केन्द्रीय सचिवालय राजभाषा सेवा, राजभाषा विभाग, गृहमंत्रालय के नियंत्रणाधीन एक हिन्दी अनुभाग कार्य कर रहा है जो राजभाषा अधिनियम, 1963 तथा इससे संबंधित अन्य नियमों और विनियमोंका समुचित अनुपालन सुनिश्चित करने के लिए अथक प्रयास कर रहा है। राजहित में हिन्दी के प्रगामी प्रयोग को बढ़ाने के लिए निरंतर उपाय किए जा रहे हैं। वर्ष 2025-26 के दौरान हिंदी के प्रगतिशील उपयोग के लिए हिंदी दिवस, हिंदी पत्रिका जलवाणी का प्रकाशन, तकनी की / प्रशासनिक हिंदी कार्यशाला, हिंदी संगोष्ठी आदि सहित विभिन्न उपाय किए गए।

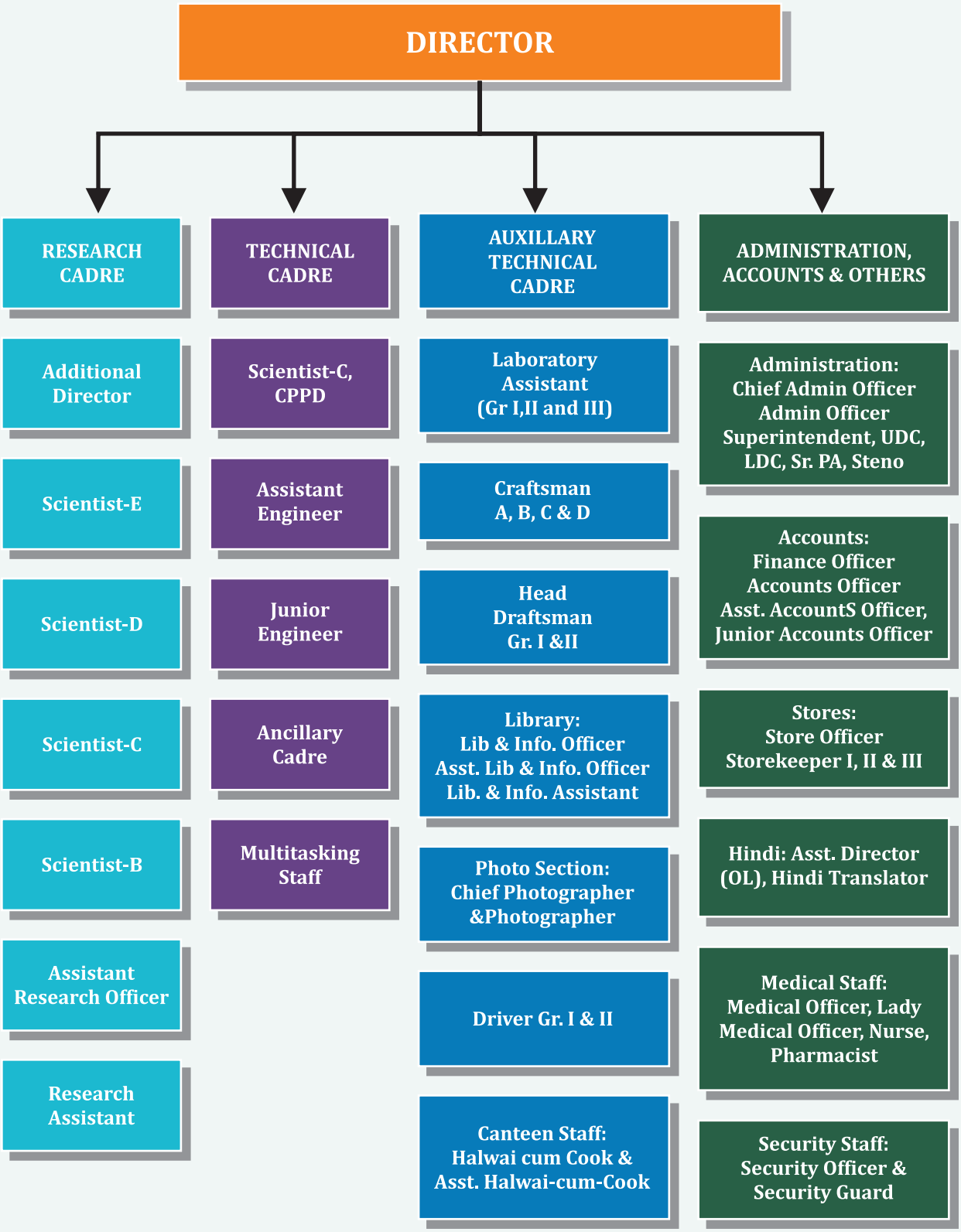
IMPORTANT VISITORS/EVENTS

In 2025-26, CWPRS was honored to host a variety of significant guests, such as, Shri C.R. Patil, Hon'ble Union Minister, Shri Murlidhar Mohol, Hon'ble Union Minister of State for Civil Aviation and Cooperation, Shri V. L. Kantha Rao, Secretary, D/o Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, Mrs. Debashree Mukherjee, Former Secretary, DoWR, RD&GR, MoJS, Shri Ashok K Meena, Secretary D/o Drinking Water and Sanitation, MoJS, Ms. Archana Varma, Additional Secretary, National Water Mission (NWM), Shri Subodh Yadav, Additional Secretary, DoWR, RD&GR, MoJS, Ms. Sunita Yadav, Joint Secretary and Economic Advisor, Ministry of Jal Shakti, and a delegation from KHPL Bhutan

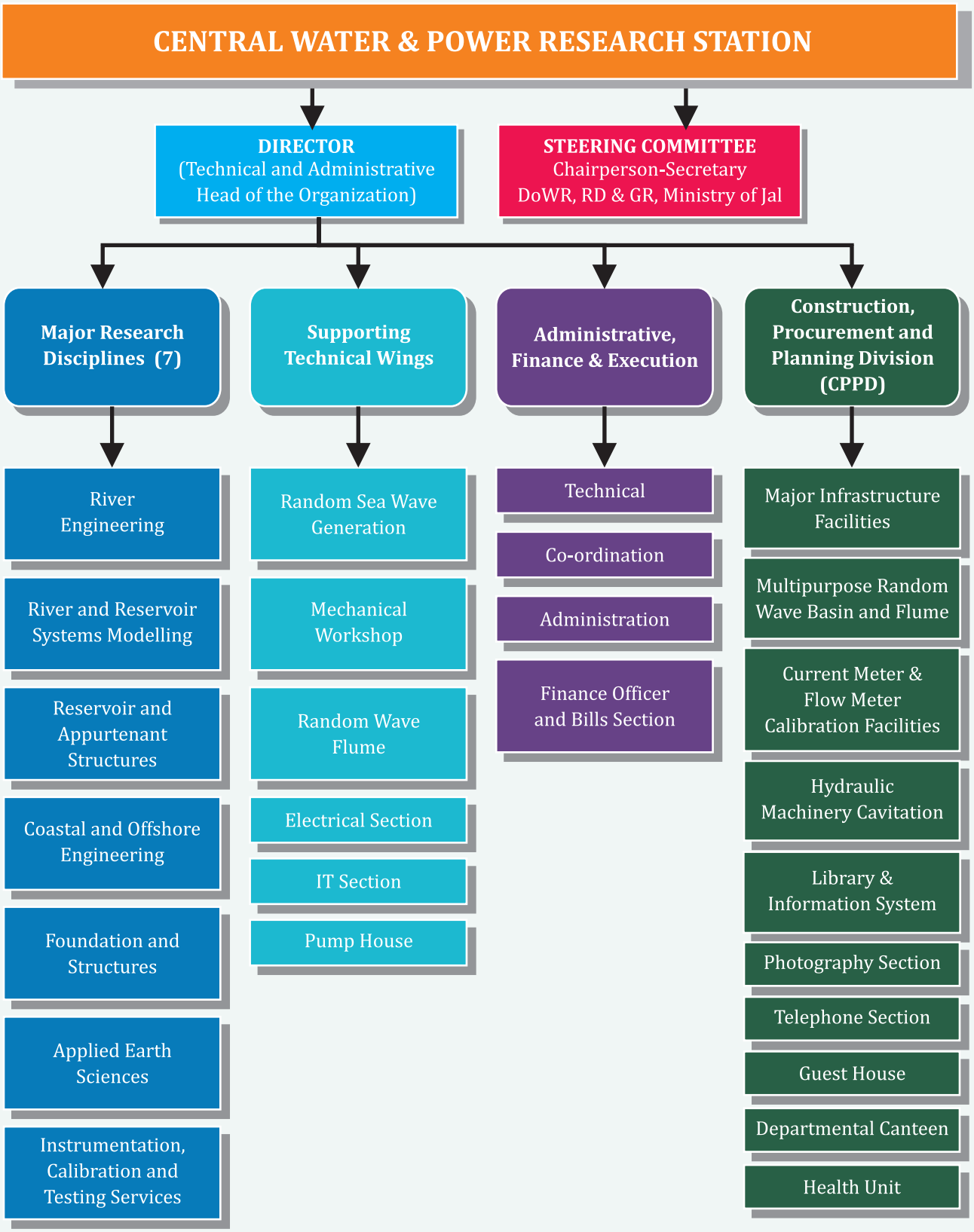
acoomapnied by Engineers from Tata Power among others have also visited the CWPRS during the past year. In addition to that CWPRS has also organized various significant events, namely, Stakeholder Workshop on "Role of CWPRS in Dam Safety and Rehabilitation-Building Strategic Partnership", National Seminar on "Managing Aging and Distressed Hydro Power Projects: Challenges and Opportunities", 7th National Conference on Coastal, Harbour and Ocean Engineering (INCHOE)-2025, National Workshop "PreciSense-2026- Reliable Hydrometric Data through Precise Sensing" among various other workshops edicated to training of personnel from government as well as private sector and witnessed the interest of variegated participant from multiple scientific communities ranging from students, academicians, researchers and scientists across the nation.

PART-I GENERAL

ORGANIZATIONAL SET UP



ORGANIZATIONAL CHART



BUDGET AND FINANCE

1. Plan Schemes

The main purpose of Plan Schemes is to develop and strengthen the research infrastructure at CWPRS for serving the nation through research more efficiently and effectively. The following scheme was under implementation at the institution during 2025-26.

During 2025-26 following important activities were undertaken under the above-mentioned scheme.

Name of the Scheme	Final Estimate 2025-26
R&D Programme in Water Sector under MoJS, Dept. of WR, RD & GR-CWPRS component	16.77 Crore

R&D in Water Sector, Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation - R&D in Apex organizations - CWPRS component.

Objectives: Under the Plan Scheme: "R&D Programme in Water Sector", CWPRS has mainly aimed at strengthening and modernization of its laboratories, instruments, and infrastructure facilities. Other major items include ICTE, Training and Dissemination, Basic Research and Mathematical Modeling Softwares etc.

Activities: During 2025-26, actual expenditure is Rs. 16.34 Cr. against thebudget outlay of Rs 16.77 Cr., The major activities undertaken included:

i. Infrastructure: (Rs.6.69 Cr)

- (Rs. 0.76 Cr) Spill-over amount of FY2024-25 for committed liabilities of Construction of Concrete Technology Laboratory
- (Rs. 0.24 Cr) Part work of Upgrading the facilities for Cavitation & Volumetric lab for pumps &turbine testing
- (Rs. 0.82 Cr) Part work of intake arrangement by laying pipeline for Centralized experimental facilities of River Engineering studies.
- (Rs. 0.71 Cr) Renovation of Numerical simulation laboratories, seismic observatory, upgradation of different hangars in office campus
- (Rs. 0.73 Cr) Water proofing over the roof of major buildings and NHP laboratories.
- (Rs. 1.50 Cr) Renovation of Community Centre and up-keeping of sports facilities in CWPRS
- (Rs. 0.65 Cr) Landscape and Horticulture activities in and around area attached to Office campus and Guest House/Residential Complex
- (Rs. 0.78 Cr) Re-carpeting of existing road, extension of rain water harvesting and decomposition unit in office and Residential Complex
- (Rs. 0.50 Cr) Conversion of transmission line, electrical re-wiring and infrastructure for different laboratories

ii. Machinery & Equipment: (Rs. 8.13 Cr)

- (Rs. 0.55 Cr) Procurement of Multi-channel Seismic reflection system for Geophysical investigation
- (Rs. 0.23 Cr) Procurement of ROV for penstock inspection to surface, leakages & crack detection for HMC laboratory
- (Rs. 0.37 Cr) S/I/C/T of 3-dimensional printer for fabrication of physical model for hydraulic studies.
- (Rs. 0.75 Cr) Procurement of UV chamber, triaxial testing system and different machinery for up-gradation of Concrete Technology laboratory
- (Rs. 0.44 Cr) Procurement of Motion AccelerographGlobal Positioning system for seismological investigation
- (Rs. 0.92 Cr) Up-gradation of River Engineering laboratory by procurement of MIKE software
- (Rs. 1.35 Cr) Procurement of machineries and softwares for up-gradation of different labs viz. Seismological, Vibration Technology, Isotope hydrology, Geophysicsand MMCE division
- (Rs. 1.24 Cr) Up-gradation of existing CFD (Flow-3D) software for Spillway and Energy Dissipators studies
- (Rs. 1.65 Cr) S/I/C/T of high-performance computing system with IT infra and Geo-HECRAS software for establishing Numerical Modelling Centre
- (Rs. 0.63 Cr) Procurement of different electrical and electronic gadgets for research facilities

iii. Operating Cost: (Rs. 1.52 Cr)

Expenses for operating cost of training & dissemination, basic research, outsourcing of house-keeping task andelectrical usage charges, etc.

2. Non-Plan Budget

The non-plan budget and expenditure details for the year 2025-26 are given below:

Item/Head	Amount (Crore)	
	Final Estimate	Actual Expenditure
Salary	82.82	82.80
Non-Salary	11.32	11.08
Total (Gross)	94.14	93.88
Recovery (-)	15.00	14.68
Net	79.14	79.20

MONITORING OF RESERVATION STATUS

1. Minority Welfare

The recruitment of personnel from minority communities and representation of minorities in Selection Committees/Boards is monitored in accordance with guidelines issued by the erstwhile Ministry of Welfare (present Ministry of Social Justice and Empowerment) in March 1990. No minority official is appointed at CWPRS from April 2025 to March 2026.

2. Monitoring of Reservation for physically handicapped

Reservation for physically handicapped persons is being made to ensure fulfillment of three percent (3%) quota as stipulated. At present, a total of 26 people with disabilities are working in the Research Station with 04, 07 and 15 in group A, B and C respectively.Benefits earmarked for, like Transport Allowance, Concessions regarding Recruitment fees, Professional Tax exemptions etc. are provided as per Government instructions. Slope ladders and special washrooms are being provided in the Research Station wherever possible.

3. Monitoring of Reservations for SC/ST/OBC

Group	Position as on 31st March 2026
	PH
A	04
B	07
C	15
Total	26

Monitoring of the recruitment of candidates form SC/ST/OBC category is made following the guidelines issued from time to time. Shri G. V. Ramanarao, Scientist 'E' guides the overall matters in this regard as Liaison Officer. A summary of posts filled from SC/ST/OBC categories are given below.

4. Constitution of Internal Complaints Committee

There are nine members in Internal Complaints Committee (I.C.C.) under Section 4 of Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013. Smt.Lata Gupta, Scientist 'D' is the Chairperson of the committee. Meetingsof the committee are held regularly. No complaints were received during 2025-2026.

Group	Position as on 31stMarch 2026				
	SC	ST	OBC	EWS	UR
A	23	10	43	02	94
B	21	12	42	02	98
C	47	21	91	03	154
Total	91	43	176	07	346

VIGILANCE AND DISCIPLINARY CASES

Break up of vigilance and disciplinary cases in respect of different categories of staff of CWPRS during 2025-26is mentioned below in tables, I and II, respectively.

Table - I: Vigilance Cases

Sl. No.	Particulars	Group `A' & `B'	Group `C'
1	No. of cases pending in the beginning of the year	00	00
2	No. of cases added during the year	01	00
3	No. of cases disposed off during the year	01	00
4	No. of cases pending at the end of the year	00	00

Table- II: Disciplinary Cases where the Director, CWPRS, is the Disciplinary Authority

Sl. No.	Particulars	(Categories of officers/staff)		
		Group `A'	Group `B'	Group `C
1	No.of cases pending in the beginning of the year	NA	0	00
2	No.of cases added during the year	NA	01	00
3	No.of cases disposed off during the year	NA	01	00
4	No.of cases pending at the end of the year	NA	0	00

As part of the vigilance awareness programme, Vigilance Awareness Week was observed at Central Water and Power Research Station (CWPRS), Pune with various activities from 27th October to 02nd November 2025.

Vigilance Awareness Week:

Essay and Elocution Competitions held during the Vigilance Awareness Week

Valedictory Function, Prize Distribution by Dr. Prabhat Chandra, Director

RTI ACT, GRIEVANCE REDRESSAL MECHANISM AND CITIZEN'S CHARTER

1. RTI Act

Under the provisions of Section 4 (b) of RTI Act 2005, manual giving Suo-moto information on CWPRS has been published on the Website www.cwprs.gov.in as a part of implementation of the act. The manual is periodically being updated.

Further, all efforts are being taken to administer and implement the act. The citizens are also given guidance in obtaining information under the act. The names, addresses, and other details regarding the Appellate Authority, Public Information Officer, Transparency Officer and Nodal Officer are given below.

Appellate Authority	**Shri M. K. Verma,** Scientist 'E' CWPRS, Khadakwasla, Pune- 411024 Tel: 020-24103456; E-mail: verma.mk@cwprs.gov.in
Public Information Officer	**Mrs. Sushma Jitesh Vyas,** Scientist-D CWPRS, Khadakwasla, Pune- 411024 Tel:020-24103345; E-mail: cpio-cwprs@cwprs.gov.in
Transparency Officer	**Dr. Jiweshwar Sinha,** Scientist-E CWPRS, Khadakwasla, Pune- 411024 Tel: 020-24103293; E-mail: sinha.j@cwprs.gov.in
Nodal Officer	**Dr. M. Selva Balan,** Additional Director CWPRS, Khadakwasla, Pune- 411024 Tel: 020-24103477; E-mail: :selvabalan_m@cwprs.gov.in
Asst. Public Information Officer	**Shri. Aniruddha Bharde,** Assistant Research Officer CWPRS, Khadakwasla, Pune- 411024 Tel: 020-24103468; E-mail: bharde.ab@cwprs.gov.in

The Department of Personnel and Training (DoPT) has launched a web portal "RTI Online" with URL https://rtionline.gov.in/RTIMISfor receiving and processing RTI applications, appeals online, with the facility to align all the Public Authorities (PAs) of Government of India.

As per the directives, CWPRS has aligned with this RTI-MIS online portal of DoPT and started processing of all requests for seeking information under RTI Act, appeals through RTI-MIS portal. All requests which have been received manually are also being processed and disposed-off through the RTI-MIS online portal.

As per the requirements of this online RTI-MIS system, user accounts have been created for Nodal Officer (RTI), CPIO, FAA and five Deemed Public Information Officers (DPIOs).

Information on requests and appeals handled under the act during 2025-26 is summarized below.

	Opening balance as on 1/04/2025	Received during 2025 -26 (including cases transferred to other Public Authority)	No. of cases transferred to other Public Authorities	Decisions where requests/ appeals rejected and disposed off	Decisions where requests/ appeals accepted and disposed off
Requests	1	133	2	0	124
First Appeals	1	17	0	0	17
Amount of Charges Collected (Rs) 174 /-					
Registration fee amount		Additional fee & any other charges		Penalties amount	
130/-		44/-		Nil	

2. Grievance Redressal Mechanism

A Grievance Cell under the chairmanship of Dr. Jiweshwar Sinha, Scientist-E, functions with the objective of looking into the grievances and for their redressal. The relevant data relating to cases handled during 2025-26 is given below:

Grievance cases pending as on 31st March 2025	1
Cases received during 1st April 2025 to 31st March 2026	29
Cases disposed off during 1st April 2025 to 31st March 2026	28
Cases pending as on 31st March 2026	2

The Centralized Public Grievance Redress and Monitoring System (CPGRAMS), the web-based portal that enables an Indian citizen to lodge a complaint from anywhere and anytime directly, has been implemented at CWPRS. Periodical updating of the entries is being carried out and relevant reports are submitted monthly, quarterly, half yearly and yearly.

3. Citizen's Charter

The Citizen's Charter in respect of CWPRS, formulated by a Task Force specially constituted for the purpose, has been subsequently upgraded/ revised/ modified in pursuance of related instructions/communications from the Ministry from time to time, including the 7-step model for `Sevottam for Citizen Centricity in administration' as per relevant instructions of DARPG. The main components of the Citizen's Charter include Vision and mission statement, details of business transacted and customers/ clients, service provided by the organization, details of grievances redress mechanism in place and expectations from clients. Presently the Charter is in the process of getting formal approval from MoJS, Dept. of WR, RD&GR

ORGANISATIONAL HIGHLIGHTS

A. VISIT OF HONORABLE DIGNITARIES FROM THE MINISTRY

Ms. Sunita Yadav, Joint Secretary and Economic Advisor, Ministry of Jal Shakti, visited CWPRS on April 25, 2025 and explored various physical models during the visit

Mrs. Debashree Mukherjee, Secretary, DoWR, RD & GR, MoJS visited CWPRS on June 9, 2025 and explored various models during the visit

Shri C.R. Patil, Hon'ble Union Minister, Ministry of Jal Shakti accompanied with Shri Murlidhar Mohol, Hon'ble Union Minister of State for Civil Aviation and Ministry of Cooperation, Shri Mukeshbhai Patel, Hon'ble Minister of State for Water Resources, Government of Gujarat, Prof. (Smt.) Medha Kulkarni, Hon'ble Member of Parliament and Ms. Debashree Mukherjee, Secretary,DoWR, RD & GR, Shri Pradeep Kumar Agarwal, Joint Secretary, NRCD, Ministry of Jal Shakti visited CWPRS on June 17 , 2025

Shri Ashok K Meena, Secretary D/o Drinking Water and Sanitation, MoJS visited CWPRS on August 29, 2025.

Shri V. L. Kantha Rao, Secretary and Ms. Archana Varma, Additional Secretary Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti visited CWPRS during January 21-22, 2026.

Review meeting of senior officers of CWPRS chaired by the Secretary DoWR, RD, GR and MoJS on January 22, 2026

Glimpses of PreciSense 2026 conference organized by CWPRS in association with Indian Society for Hydraulics during January 22-23, 2026

B. VISIT OF DIGNITARIES FROM VARIOUS ORGANISATIONS

Dr. M. K. Sinha, Chairman, CWC visited CWPRS on April 28, 2025

CEO of KHPL, Bhutan and Engineers from M/s TATA Power, M/s TCE-Lombardi visited CWPRS on June13, 2025

Shri Adesh Titarmare, IAS, Deputy Chairperson & Senior officials of Mumbai Port Authority visited CWPRS on July 11, 2025

Mrs. Sheela Karunakaran, Chief Engineer along with senior officers of CIDCO, Navi Mumbai visited CWPRS on July 01, 2025.

Shri M. K. Kashyapa, CEO, RHPCL visited CWPRS on August 07, 2025

Prof. P. L. Patel, Director, VNIT, Nagpur and President ISH visited CWPRS on October 17, 2025

Vice Admiral Shri Ankur Sharma, Director General Naval Project (DGNP), Mumbai along with Senior officials of Indian Navy visited CWPRS on December 15, 2025.

Mr. Seji Tanabe of Yokogama, Japan along with officials from M/s Adept FluidynePvt.Ltd, Pune visited CWPRS on December 22, 2025

C. IMPORTANT EVENTS

Glimpses of the 2nd Steering Committee meeting of CWPRS chaired by Mrs. Debashree Mukherjee, Secretary, DoWR, RD & GR, MoJS held on June 9, 2025 at CWPRS

Glimpses of 109th Foundation Day and Open House Day of CWPRS celebrated on June 14, 2025

केन्द्रीय जल और विद्युत अनुसंधान शाला, खड़कवासला, पुणे में 15 अगस्त 2025 को ''79 वां स्वतंत्रता दिवस'' मनाया गया

National Seminar on "Managing Aging and Distressed Hydro Power Projects: Challenges and Opportunities" organized at CWPRS during September 11-12, 2025.

संघ की राजभाषा नीति के कार्यान्वयन हेतु केन्द्रीय जल एवं विद्युत अनुसंधान शाला में दिनाँक 17 सितम्बर 2025 से 28 सितम्बर 2025 तक हिन्दी पखवाड़ा समारोह का आयोजन किया गया

Campaign on Diabetic Free India and Eye Checkup camp organized under Recreation club as a part of "Swacchhata hi Seva-2025" at CWPRS on September 29, 2025.

Massive Cleanliness Drive under "Swachhata Hi Seva Pakhwada-2025" carried out during September 17- October 2, 2025 by CWPRS.

Mass Swachhata Pledge, Tree Plantation inside campus, E-Waste Collection and disposal activities carried out under "Special Campaign for Disposal of Pending Matters (SCDPM)-5.0" during October 2-31, 2025

Stakeholder Workshop on "Role of CWPRS in Dam Safety and Rehabilitation-Building Strategic Partnership" organized by CWPRS on October 29, 2025

Various Activities conducted by CWPRS during Vigilance Awareness Week 2025 from October 27 to November 02, 2025 with the theme "Vigilance: Our Shared Responsibility"

On the occasion of "Rashtriya Ekta Diwas", Director, CWPRS administered the National Unity Pledge to all employees on October 31, 2025

Glimpses of 7th National Conference on Coastal, Harbour and Ocean Engineering (INCHOE)-2025 organized by CWPRS in association with Indian Society for Hydraulics during November 6-7, 2025

Water Conservation Awareness Outreach Program conducted by CWPRS at PMC Schools, Khadakwasla, Pune on December 18, 2025

The Water Conservation Awareness Outreach Program conducted at PMC School No.1 and No. 2, Khadakwasla, Pune on December 18, 2025

A community outreach program organized for students of Kendriya Vidyalaya, DIAT, Giringar, Pune on January 2, 2026.

National Workshop "PreciSense-2026- Reliable Hydrometric Data through Precise Sensing" organized by CWPRS during 22-23 January 2026.

Exchange of MOUs to strengthen collaboration in the area of research & knowledge sharing

26 जनवरी 2026 को केन्द्रीय जल एवं विद्युत अनुसंधान शाला में 77वां गणतंत्र दिवस मनाया

International Women's Day was celebrated on March 9, 2026 at CWPRS centered around the theme "Nari Shakti se Viksit Bharat"

Various activities conducted at CWPRS under "Swachhata Pakhwada 2026 - Special Campaign" during March 16-31, 2026

"World Water Day-2026" celebration at CWPRS on March 06, 2026

Constitution Day celebrated at CWPRS: Inauguration of "Display of Preamble of Constitution" and reading of Preamble on November 26, 2025,

राजभाषा हिंदी के प्रगामी प्रयोग से संबंधित प्रमुख गतिविधियाँ (वर्ष: 2025-26)

इस अनुसंधान शाला में कार्यालयीन कामकाज में हिंदी के प्रगामी प्रयोग से संबंधित गतिविधियों के बारे में निम्नानुसार जानकारी प्रस्तुत है :

हिंदी दिवस तथा हिंदी पखवाड़ा :

राजभाषा विभाग, गृह मंत्रालय द्वारा जारी दिशा-निर्देशों के अनुसार माननीय गृह एवं सहकारिता मंत्री जी की अध्यक्षता में दिनांक 14 सितंबर 2025 और 15 सितंबर 2025 कोमहात्मा मंदिर कन्वेंशन एवं एक्सिबिशन सेंटर, गाँधी नगर, गुजरात में आयोजित हिंदी दिवस तथा 5वें अखिल भारतीय राजभाषा सम्मेलन में अनुसंधान शाला के प्रतिनिधि के रूप में श्री सुश्री विजया नागपुरे, सहायक निदेशक (राजभाषा), श्री संजय नाथ झा, वैज्ञानिक बी एवं श्री डीएम त्रिपाठी, अनुसंधान सहायक ने भाग लिया। प्रति वर्ष की भांति इस वर्ष भी हिंदी पखवाड़े के दौरान अनुसंधान शाला में राजभाषा कार्यान्वयन समिति के मार्गदर्शन में हिंदी निबंध, हिंदी प्रश्नमंच, तकनीकी शब्दों का अनुवाद, हिंदी शुद्धलेखन,हिंदी कहानी चर्चा, हिंदी टंकण, हिंदी पोस्टर आदि प्रतियोगिताओं का आयोजन किया गया। इन प्रतियोगिताओं में संस्था के अधिकारियों एवं कर्मचारियों ने उत्साह से भाग लिया।भारत सरकार द्वारा लागू मूल रूप में हिंदी टिप्पण आलेखन पुरस्कार योजना अनुसंधान शाला में लागू की गई थी। इन प्रतियोगिताओं में योग्यता प्राप्त अधिकारियों एवं कर्मचारियों को मुख्य अतिथि के करकमलों द्वारा नकद पुरस्कार एवं प्रमाणपत्र देकर सम्मानित किया गया ।इस अवसर पर डॉ. ममता जैन, लेखिका एवं प्रभावशाली वक्ता(हिंदीभाषा), समाजसेवी मुख्य अतिथि के रूप में उपस्थित थी।

मुख्य अतिथि डॉ. ममता जैन को दिनाँक ०३ अक्तूबर को केंद्रीय जल और अनुसंधान शाला, पुणे के निदेशक द्वारा स्मृति चिह्न प्रस्तुत करके हिन्दी पखवाड़ा २०२५ का शुभारम्भ किया गया।

हिंदी गृह पत्रिका ''जलवाणी'' का प्रकाशन :

हिंदी पखवाड़ा समापन समारोह के अवसर पर मुख्य अतिथि के करकमलों द्वारा अनुसंधान शाला की हिंदी गृह पत्रिका ''जलवाणी'' के 32वें अंक का विमोचन किया गया। अनुसंधान शाला के अधिकारियों एवं कर्मचारियों ने उक्त पत्रिका में विभिन्न विषयों पर लेख, कविता,कहानियाँ आदि लिखकर अपना बहुमूल्य योगदान दिया है।

केन्द्रीय जल एवं विद्युत अनुसंधान शाला की हिन्दी गृह पत्रिका ''जलवाणी'' के 32वें अंक का विमोचन

तकनीकी /प्रशासनिक हिंदी कार्यशालाओं में उपस्थित अधिकारी व कर्मचारी

तकनीकी/ प्रशासनिक हिंदी कार्यशाला का आयोजन:

गृह मंत्रालय द्वारा जारी वार्षिक कार्यक्रम में दिए गए निर्देशों के अनुसार अनुसंधान शालामेंदिनांक 21जुलाई 2025, 26 नवम्बर2025एवं 26 मार्च2026 को प्रशासनिक/तकनीकी हिंदीकार्यशालाएँ आयोजित कीगई जिसमें अनुसंधान शाला के विभिन्न पदों पर आसीन अधिकारियों/ कर्मचारियों ने भाग लिया। प्रशिक्षण कार्यक्रम में संघ की राजभाषा नीति, सरकारी पत्राचार के नमूने, टिप्पण, आलेखन एवं भाषा और वर्तनी के बारे में उपयोगी सामग्री उपलब्ध कराई गई। तकनीकी व्याख्याताओं ने तकनीकी विषयों पर व्याख्यान दिए। व्याख्याताओं द्वारा आलेख, चित्रों और विडियो केमाध्यम से सहज और सरल तरीके से तकनीकी विषयों को हिंदी भाषा में समझाने की कोशिश की गई। इन कार्यशाला में व्याख्यान देने वाले व्याख्याताओं के नाम, पदनाम और उनके व्याख्यान के विषय निम्नानुसार थे:

क्र.सं.	दिनांक	व्याख्याता का नाम,पदनाम	विषय सारांश का नाम
1.	21 जुलाई 2025	श्री सतीश धुरी, अनुवाद अधिकारी, कोंकण रेलवेकोर्पो गोवा	हिंदी कार्यान्वयन में ई-टूल्स की भूमिका
2.	26 नवम्बर 2025	श्री मोहम्मद जिया उल कमर,वैज्ञानिक "डी"	जल विद्युत परियोजनाओं में तलछट प्रबंधन और मॉडलअध्ययन का महत्व
		श्रीमती लता गुप्ता, वैज्ञानिक "डी"	दूर से संचालित ROV उपकरण
3	26 मार्च 2026	डॉ. अनिल बागवान एवं श्री माधवी गजरे, वैज्ञानिक बी	गणितीय प्रतिमान का महत्व

संगणकों में हिंदी साफ्टवेयर :

अनुसंधान शाला के सभी संगणकों में हिंदी सॉफ्टवेयर डलवाए गए हैं जैसे iLeap, ISM Office, ISM Publisher, और Translato इत्यादि। यूनीकोड आधारित सॉफ्टवेयर 6 नेट वर्ज़न का प्रयोग किया जा रहा है। साथ ही गुगल आधारित यूनीकोड सॉफ्टवेयर का प्रयोग भी किया जा रहा है। हिंदी कार्यशालाओं के माध्यम से अधिकारियों / कर्मचारियों को इस संबंध में वर्तमान में उपलब्ध आधुनिक तकनीकों के बारे में प्रशिक्षण दिया जा रहा है।

हिंदी वेबसाइट :

इस अनुसंधान शाला की वेबसाइट www.cwprs.gov.in बनाई गई है जिसमें संस्था के बारे में जानकारी हिंदी में उपलब्ध कराई गई है।

अनुसंधान शाला के इन्ट्रानेट पर हिंदी में नेमी प्रपत्र / मानक मसौदे उपलब्ध कराना:

प्रतिदिन काम आनेवाले नेमी क़िस्म के प्रपत्र, मानक मसौदे जैसे आकस्मिक छुट्टी के आवेदन, कार्यग्रहण रिपोर्ट, प्रस्थान रिपोर्ट, प्रभागों/अनुभागों के नाम, मंत्रालयों / विभागों के नाम, छुट्टियों के प्रकार, वर्तनी, संदेश, गृह पत्रिका ''जलवाणी'', हमेशा प्रयुक्त होने वाले वाक्यांश आदि इन्ट्रानेट पर हिंदी में उपलब्ध कराए गए हैं। हिंदी नियम पुस्तिका,गृह मंत्रालय के राजभाषा विभाग द्वारा प्रतिवर्ष जारी वार्षिक कार्यक्रम तथा अनुसंधान शाला के सभी प्रयोगशालाओं की तकनीकी शब्दावली को भी इन्ट्रानेट पर उपलब्ध कराया गया हैं।

हिंदीभाषा तथा टंकण प्रशिक्षण :

हिंदी शिक्षण योजना, पुणे द्वारा संचालित भाषा,टंकण तथा आशुलिपि प्रशिक्षण पाठ्यक्रम हेतु अनुसंधान शाला से बारी-बारी से अधिकारियों/ कर्मचारियों को नामित किया जाता है। वर्तमान में अनुसंधान शाला के तीन कर्मचारी हिंदी टंकण का प्रशिक्षण प्राप्त कर रहे हैं।

विभागीय निरीक्षण :

हिंदी पत्राचार को बढ़ाने तथा गृह मंत्रालय के राजभाषा विभाग द्वारा समय-समय पर जारी अन्य निर्देशों के अनुपालन को सुनिश्चित करने हेतु सहायक निदेशक (राजभाषा) द्वारा व्यक्तिगत रूप से प्रशासन अनुभाग, निर्माण, क्रय और योजना कक्ष तथा बिल अनुभाग का निरीक्षण किया गया। निरीक्षण के दौरान यह पाया गया कि लगभग सभी प्रभागों में अग्रेषण पत्र, छुट्टी के आवेदन, कार्यभार प्रस्थान तथा कार्यभार ग्रहण रिपोर्ट आदि कार्य नियमित रूप से हिंदीमें किए जा रहे हैं। निरीक्षण के दौरान अन्य विषयों से संबंधित पत्राचार को भी हिंदीमें करने के लिए मार्गदर्शन किया गया। अनुसंधान शाला में हिंदीके प्रयोग को बढ़ावा मिलने के उद्देश्य से राजभाषा विभाग द्वारा जारी जांच बिन्दुओं को सभी अनुभागों एवं प्रभागों में

परिचालित किया गया और सभी से अनुरोध किया गया कि अपने-अपने प्रभागों में उसका अनुपालन सुनिश्चित किया जाएं। साथ ही हिंदी में प्रवीणता प्राप्त कर्मचारियों को हिंदी में कार्य करने हेतु व्यक्तिशः आदेश जारी किए गए।

हिंदी में कार्य के लिए अनुभागों का नामांकन:

निम्नांकित प्रभागों/अनुभागों को कार्य की कुछ मदें हिंदी में करने के लिए विनिर्दिष्ट किया गया है:

क्र.सं.	प्रभाग/ अनुभाग	प्रभाग/ अनुभाग द्वारा हिंदी में किए जानेवाले कार्य
1.	प्रशासन	• "क", "ख" और "ग" समूह के कर्मचारियों की सेवा पुस्तिकाओं में प्रविष्टियाँ • छुट्टियों के कार्यालय आदेश • आवधिक वेतन वृद्धि के प्रमाणपत्र • छुट्टी यात्रा रियायत अग्रिम का आदेश • वेतन नियतन के कार्यालय आदेश • सेवा निवृत्ति के आदेश • कर्मचारियों की वरिष्ठता सूची • आवास आबंटन की अग्रता सूची • दौरा अग्रिम के आदेश • कुछ फ़ाइलों में टिप्पण और आलेखन

क्र.सं.	प्रभाग/ अनुभाग	प्रभाग/ अनुभाग द्वारा हिंदी में किए जानेवाले कार्य
2.	प्रशासन (नि. औ. स्था.)	•कर्मचारियों की सेवा पुस्तिकाओं में प्रविष्टियाँ •छुट्टियों के कार्यालय आदेश •आवधिक वेतन वृद्धि के प्रमाणपत्र •कर्मचारियों को ज्ञापन •छुट्टी यात्रा रियायत अग्रिम का आदेश •वेतन नियतन के कार्यालय आदेश •सेवा निवृत्ति के आदेश •कर्मचारियों की वरिष्ठता सूची •कुछ फ़ाइलों में टिप्पण और आलेखन
3.	बिल अनुभाग	•चिकित्सा अग्रिम के आदेश •चिकित्सा अग्रिम से संबंधित जाँच सूची •दौरा अग्रिम के आदेश
4.	निर्माण तथा क्रय कक्ष	•बेबाकी प्रमाण पत्र •चेकों के अग्रेषण पत्र •प्राप्त हुए भुगतान की पावती
5.	तटीय इंजीनियरिंग के लिए गणितीय प्रतिमानन (संगणक)	•तकनीकी रिपोर्टों के सारांश तथा अन्य कार्यों में यथासंभव हिंदी का प्रयोग
6.	नदी जलगति विज्ञान	•तकनीकी रिपोर्टों के सारांश तथा अन्य कार्यों में यथासंभव हिंदी का प्रयोग •"जलवाणी" में लेख लिखकर कर्मचारियों का योगदान
7.	जल गुणवत्ता विश्लेषण तथा प्रतिमानन	•तकनीकी रिपोर्टों के सारांश तथा अन्य कार्यों में यथासंभव हिंदी का प्रयोग

तकनीकी काम में हिंदी का प्रयोग :

अनुसंधान शाला के विभिन्न प्रभागों/अनुभागों द्वारा किए जाने वाले अध्ययनों के आधार पर परियोजना प्राधिकारियों को भेजे जाने वाली तकनीकी रिपोर्टों के सारांश, अग्रेषण पत्र, रिपोर्ट प्रलेख पत्र, सार, प्राक्कलन, विषय सूची आदि मदें अंग्रेजी के साथ हिंदी में भी भेजी जा रही है।

e-GOVERNANCE ACTIVITIES AT CWPRS

CWPRS has made significant progress in the field of e-Governance through the implementation and expansion of several digital initiatives. The e-OfficePremium system for 500 users was implemented in 2018, and the utilization of its e-File module has consistently increased over the years, reaching its highest level in 2025. Under the e-HRMS (Manav Sampada) platform, the Leave and Annual Immovable Property Return (AIPR) modules were implemented for all CWPRS officials in 2019, followed by migration to e-HRMS 2.0 in 2024. The upgraded e-HRMS 2.0 system reintroduced the Leave and AIPR modules for all officials in 2024 and further expanded its functionality with the implementation of the Retirement Module in 2026. The SPARROW (Smart Performance Appraisal Report Recording Online Window) system was introduced for Group 'A' officials from the assessment year 2023-24 and was subsequently extended to all officials from the assessment year 2024-25. The revamped CWPRS website was successfully launched and made operational in December 2024. The Aadhaar Enabled Biometric Attendance System (AEBAS) portal is being effectively managed to maintain biometric attendance records of all officials. As part of its digital outreach initiatives, CWPRS has uploaded 35 informative videos on its official YouTube channel to promote knowledge dissemination and public engagement. NIC services are being efficiently administered through the management of official email accounts for all users and the facilitation of VPN registrations for secure access to the CWPRS intranet. In the area of e-Procurement, CWPRS extensively utilizes the Central Public Procurement Portal (CPPP) for all Civil Works tenders, while approximately 99% of procurement activities related to Goods and Services are conducted through the Government e-Marketplace (GeM) portal. The iGOTKarmayogi platform was implemented for all officials in 2026, resulting in an impressive 96.67% completion rate of mandatory courses and comprehensive assessments. Furthermore, all officials actively participated in "SADHANA Saptah" held from 2nd to 8th April 2026, during which 87 officials completed four hours of learning, 82 officials earned the AI Daksh Badge, and 2 officials achieved the Utkarsh Badge. Strengthening data management and digital record-keeping, the Central Data Repository System (CDRS) was inaugurated in 2026 and has been operational since March 2026, providing a centralized platform for institutional data storage and access.

LIBRARY AND INFORMATION SYSTEM

The Central Water and Power Research Station Library was established in 1938 with the objective of collecting and disseminating literature on various projects on water resources, energy, coastal and hydraulic engineering etc. dealt in the organization. The UNDP/UNESCO aided project "Water and Power Information System" was executed during 1982-88 with the inception of HP 3000 Series and MINISIS Library Management Software to manage and process library databases and other services. In 1998, MINISIS databases migrated to LIBSYS 3.2 version with further upgradation to 4.0 version in the year 2009. In that period, it strengthened the library to a state, from where information on any subject of interest to research personnel were made available from a variety of sources, such as databases, compact discs, microforms and through online searches from international databases.

1. Cloud based e-Granthalaya Library Management Software

In 2019, the library underwent a significant transformation by migrating its data from LIBSYS 4.0 LMS System to the Cloud based e-Granthalaya Library Management Software. This migration marked a significant step forward in streamlining operations and enhancing user experience with unlimited storage capacity and 24x7 OPAC services through the internet. Bibliographic details for Books, Conference Proceedings, Reports, and Technical Reports of the CWPRS, National and International subscribed journals are accessible via e-Granthalaya Library Management Software. Moreover, users have direct access to e-journals through this platform in the campus. The library has an Institutional Repository, providing access to full-text digital collections including annual reports, and conference proceedings.

2. Enhanced Digital Infrastructure and Services

From 2021 onwards, the library has further upgraded to become a digital library, under the funding from the National Hydrology Project and Non-plan schemes. As part of these advancements, the library took measures to enhance document security by implementing an RFID security system with enabled self-check-in check-out facility for the users. Moreover, to embrace the digital environment, a digital reading kiosk was established for accessing digital materials. The CWPRS library took a significant step towards improving the user experience by implementing a touchscreen display with the Online Public Access Catalog (OPAC). This enhancement has made it much more intuitive for scientists and engineers to search and access library resources seamlessly. The touch-screen interface offers a user-friendly experience, making the process efficient.

Furthermore, as part of its digitization efforts for rare library documents, an A3 scanner was installed. This scanner allows for the digitization of valuable and scarce materials, preserving them for easy access and future reference. The combination of these facilities demonstrates the library's commitment to embracing modern technology and facilitating access to its vast collection of resources. The infrastructure has also been enhanced with RemoteXs software, enabling scientists to access e-journals from remote locations.

3. Centralization through e-Granthalaya System

During 2025-2026, the entire CWPRS Technical Report Database was migrated to the e-Granthalaya database to ensure smoother access to all information from a single platform. Besides online services, the library keeps track of document movement very efficiently through e-Granthalaya system. The library is

procuring books, periodicals, reports, and related materials and making them available to the research personnel based on their requirements.The Library and Information System has integrated its Books, Reports, and Conference Proceedings, Bound Volumes, Technical Reports of the CWPRS, and Institutional Repository into the e-Granthalaya Library Management Software. This cloud-based integration enables users to access comprehensive informationabout the library's collections 24/7 through the OPAC (Online Public Access Catalog) at single platform. The library boasts an extensive collection of 55,228 books, Reports, and Conference Proceedings; 22,464 bound volumes; 382 CDs; and 4584 Technical Reports of the CWPRS.

4. Enhancing Research Capabilities through Global Subscriptions

In 2025, the Library and Information System successfully registered under the One Nation One Subscription (ONOS) initiative, which provides access to high-impact international scholarly research articles. CWPRS researchers now have access to over 13,421+ online journals from 36 publishers using their designated login credentials. These resources can be accessed 24/7 from anywhere. This subscription significantly enhances research capabilities by offering comprehensive access to reputed scientific and technical literature.

5. Digitization and Accessibility of Technical Collections

All available Technical Reports, Annual Reports, Technical Memoranda's, and other Technical Documents have been digitized and are accessible to researchers on demand, exclusively on campus.

6. Research Support

The library also provides plagiarism-checking services through DrillBit software for user's research papers.

7. Auxiliary Services

Additionally, comprehensive printing, reprographic, and binding services are provided for the entire institution.

PART-II
RESEARCH & DEVELOPMENT

INSTITUTIONAL STRENGTHS AND STRATEGIC COLLABORATIONS

CWPRS is mainly engaged in project specific research to evolve safe and cost-effective designs of hydraulic structures involved in development of water resources, River engineering, power plants, and coastal engineering projects. Physical and mathematical model studies coupled with field and laboratory experiments are carried out for this purpose in the seven major areas of expertise of CWPRS as follows:

1. **River Engineering:** River Engineering mainly deals with River training and bank protection works, hydraulic design of barrages and bridges, and location and design of water intakes using morphological studies. Field studies for measuring water and sediment discharge in Rivers and canals are also conducted.

2. **River and Reservoir Systems Modelling:** Hydrologic and meteorological studies are conducted to estimate extreme values of various parameters such as rainfall, temperature and humidity. Flood estimation and forecast, reservoir sedimentation and water quality studies are carried out using mathematical models and field surveys.

3. **Reservoir and Appurtenant Structures:** Spillways and Energy Dissipators are studied on physical models. Water conductor systems including head race and tail race channels/tunnels and surge shafts are studied on both physical and mathematical models. Studies are carried out on physical models for desilting basins, sedimentation and flushing through reservoirs, sediment exclusion devices. Sedimentation in reservoirs is also assessed through remote sensing.

4. **Coastal and Offshore Engineering:** This discipline deals with optimization of location, length and alignment of breakwaters, jetties, berths, approach channel, turning circle etc. for development of ports and harbours. Estimation of siltation in harbours, their disposal and sand bypassing, location of sand trap and hot water recirculation studies are carried out using both physical and mathematical models. Suggesting suitable coastal protection measures based on locally available materials is an important activity of the group.

5. **Foundation and Structures:** Laboratory and field tests are carried out to determine soil, rock and concrete properties. Mathematical modelling as well as experimental studies are conducted for studying the stability and structural safety of dams and appurtenant structures. Field studies are being carried out to assess the health of hydraulic structures and suggest suitable repair measures.

6. **Applied Earth Sciences:** Seismic surveillance of River-valley projects, assessment of site-specific design seismic parameters, controlled blasting studies for civil engineering construction sites, evaluation of quality of concrete and masonry is done by non-destructive methods and estimation of elastic properties for foundation of massive structures for geophysical methods are the main activities of this group.

7. **Instrumentation, Calibration and Testing Facilities:** Hydraulic Instrumentation is used for data collection on physical hydraulic models. Field data collection is carried out on coastal parameters like water level, velocity, wave-height etc. A Random Sea Wave Generation (RSWG) system is used for wave flumes and basins. Dam instrumentation is provided on prototype. Current meter and flow meter calibration facilities are also available, which are used extensively.

Accredited Testing Facilities

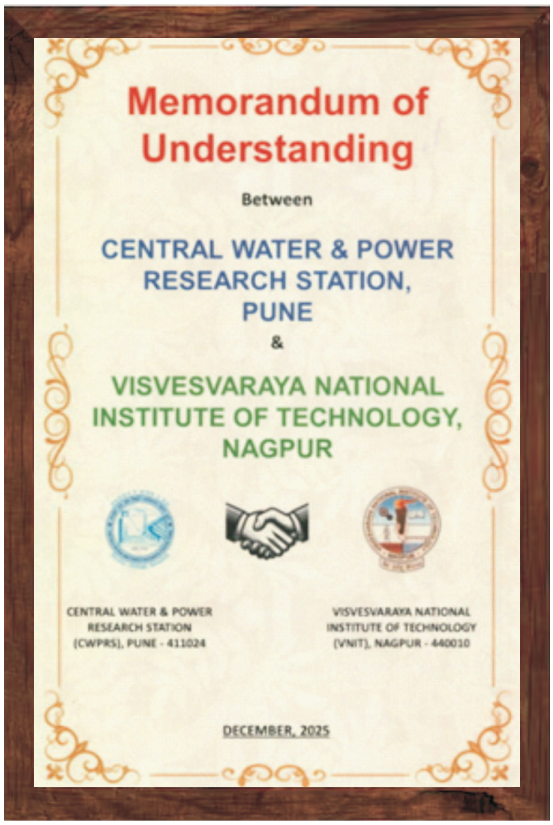
CWPRS laboratories have been granted NABL accreditation for their testing facilities in accordance with ISO/IEC 17025:2017. The accredited laboratories include:

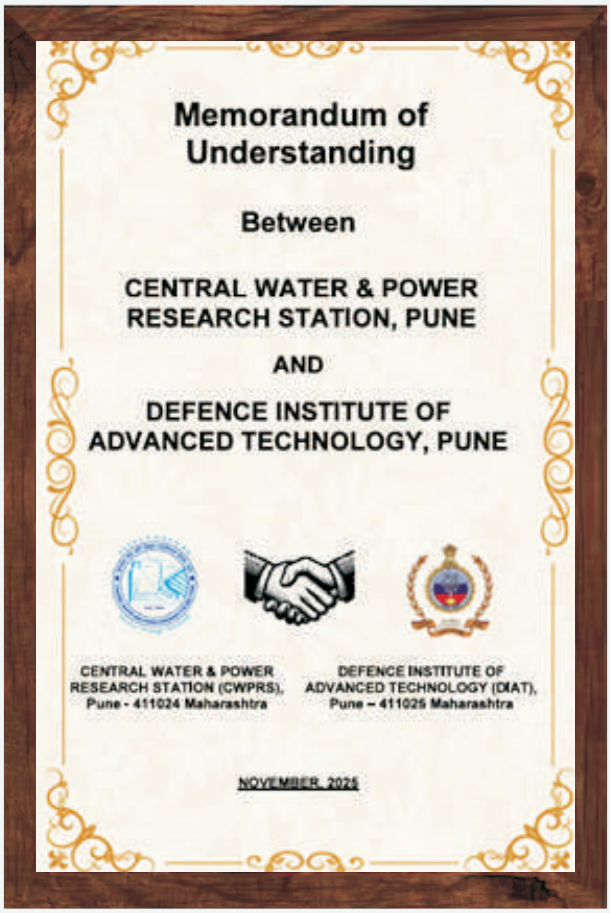
- Flow Laboratory of the Hydraulic Machinery
- Cavitation and Instrumentation (HMCI) Division
- Current Meter Rating Trolley (CMRT) Laboratory for open channel flow
- Water Quality (WQ) Laboratory
- Telemetry Laboratory for Radio Frequency Cable and Antenna testing

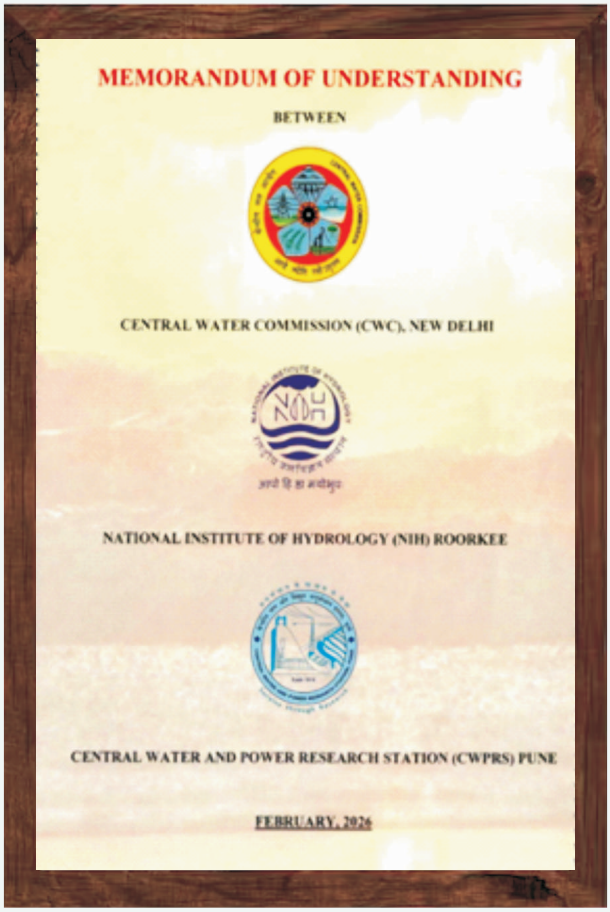
MEMORANDUM OF UNDERSTANDING

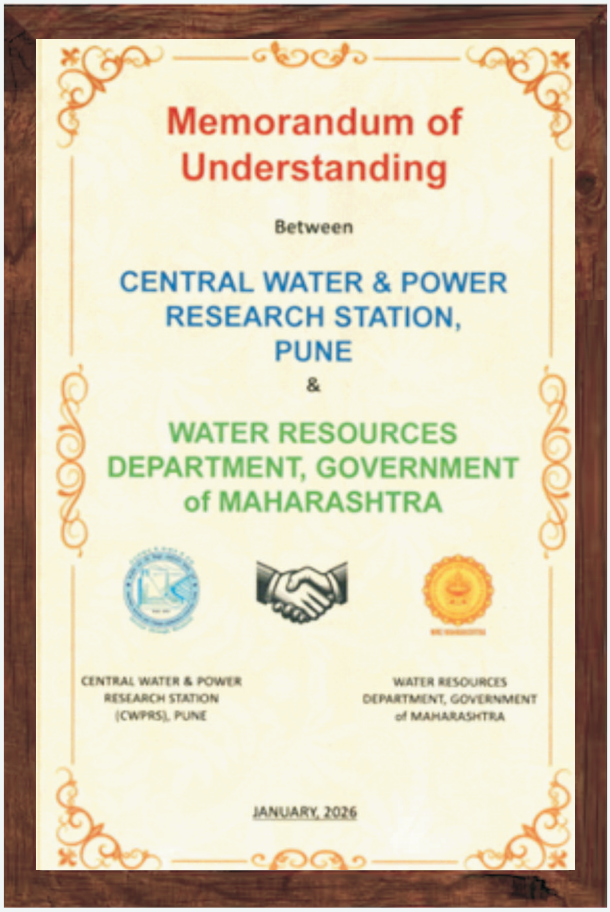
During 2025-26, CWPRS strengthened its collaborative ecosystem through strategic partnerships with leading academic institutions, research organizations and government agencies. The following MoUs are aimed at fostering joint research, technology development, capacity building and knowledge exchange across key domains of water resources engineering, dam safety, geotechnical studies and emerging technologies such as AI/ML and advanced instrumentation.

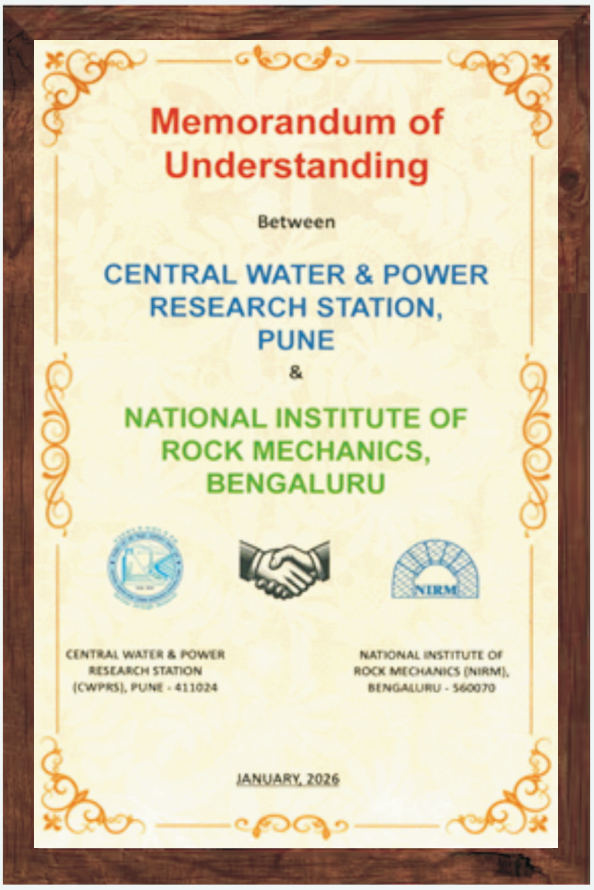
- MoU with Visvesvaraya National Institute of Technology (VNIT), Nagpur
- MoU with Defence Institute of Advance Technology (DIAT), Pune
- MoU between NIH and CWC
- MoU with Maharashtra Water Resources Department
- MoU with the National Institute of Rock Mechanics (NIRM)
- MoU with India Meteorological Department (IMD)
- MoU with IIT-Madras



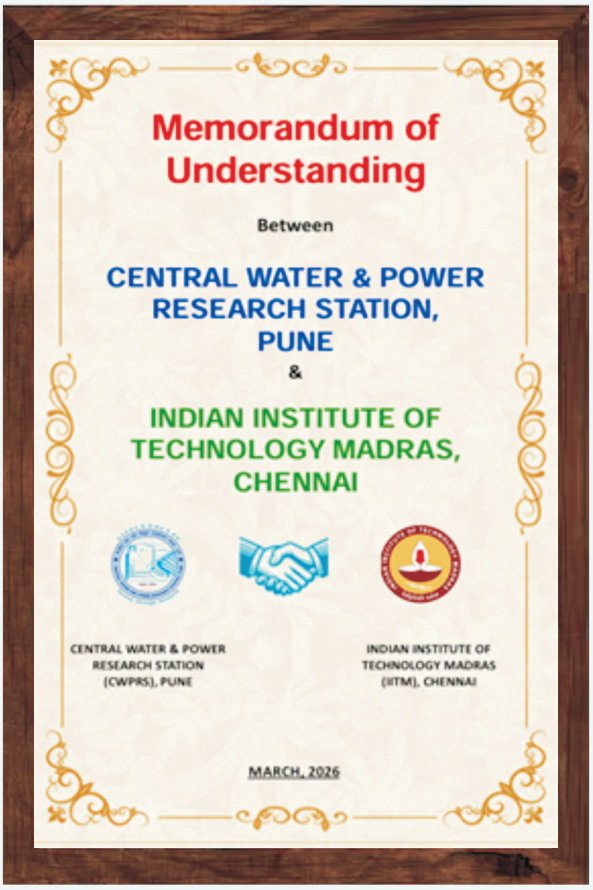

Memorandum of Understanding
Between
CENTRAL WATER & POWER RESEARCH STATION, PUNE
AND
DEFENCE INSTITUTE OF ADVANCED TECHNOLOGY, PUNE
CENTRAL WATER & POWER RESEARCH STATION (CWPRS), Pune - 411024 Maharashtra
DEFENCE INSTITUTE OF ADVANCED TECHNOLOGY (DIAT), Pune – 411025 Maharashtra
NOVEMBER, 2025


MEMORANDUM OF UNDERSTANDING
BETWEEN
CENTRAL WATER COMMISSION (CWC), NEW DELHI
NATIONAL INSTITUTE OF HYDROLOGY (NIH) ROORKEE
CENTRAL WATER AND POWER RESEARCH STATION (CWPRS) PUNE
FEBRUARY, 2026


Memorandum of Understanding
Between
CENTRAL WATER & POWER RESEARCH STATION, PUNE
&
WATER RESOURCES DEPARTMENT, GOVERNMENT of MAHARASHTRA
CENTRAL WATER & POWER RESEARCH STATION (CWPRS), PUNE
WATER RESOURCES DEPARTMENT, GOVERNMENT of MAHARASHTRA
JANUARY, 2026


Memorandum of Understanding
Between
CENTRAL WATER & POWER RESEARCH STATION, PUNE
&
NATIONAL INSTITUTE OF ROCK MECHANICS, BENGALURU
NIRM
CENTRAL WATER & POWER RESEARCH STATION (CWPRS), PUNE - 411024
NATIONAL INSTITUTE OF ROCK MECHANICS (NIRM), BENGALURU - 560070
JANUARY, 2026


CENTRAL WATER & POWER RESEARCH STATION , PUNE
INDIA METEOROLOGICAL DEPARTMENT, PUNE
Memorandum of Understanding
Between
CENTRAL WATER & POWER RESEARCH STATION, PUNE
&
INDIA METEOROLOGICAL DEPARTMENT, PUNE
January, 2026


Memorandum of Understanding
Between
CENTRAL WATER & POWER RESEARCH STATION, PUNE
&
INDIAN INSTITUTE OF TECHNOLOGY MADRAS, CHENNAI
CENTRAL WATER & POWER RESEARCH STATION (CWPRS), PUNE
INDIAN INSTITUTE OF TECHNOLOGY MADRAS (IITM), CHENNAI
MARCH, 2026

RIVER ENGINEERING

Divisions

- River Hydraulics
- Bridge Engineering
- Hydraulic Analysis and Prototype Testing

Areas of Specialization/ Expertise

- Flood control measures
- Bridges, River training & diversions
- River morphological studies
- River training works
- Sediment transport

List of Clients

- State Government Authorities
- National Highway Authority of India (NHAI)
- Farakka Barrage Project
- National thermal Power Corporation (NTPC)
- Delhi Metro Rail corporation
- Damodar Valley Corporation
- Indian Railways
- Inland Water Ways Authority of India (IWWAI)
- WAPCOS Limited
- Municipal Corporations
- Kosi River
- Ganga River

Physical Model Studies for Proposed Barrage Across River Tapi in Rundh - Bhatha, Surat, Gujarat

Project Overview

The Tapi River originates near Multai in Betul district at an elevation of 752 m above mean sea level and flows westward for a total length of 724 km before joining the Arabian Sea near Surat. It passes through Madhya Pradesh, Maharashtra, and Gujarat, with Surat city located along its lower reach, influenced by tidal effects up to 25 km upstream. Key infrastructures such as the Ukai Dam, Singanpur weir, multiple bridges, and embankments have been developed along the river to manage water supply and flood conditions. The Surat Municipal Corporation (SMC) has awarded the barrage construction across river Tapi, Surat contract to M/s Unique Construction Company Ltd. Accordingly, the Manager of M/s Unique Construction Company Ltd., Surat, formally requested the Central Water and Power Research Station (CWPRS), Pune, to conduct physical model studies for the proposed barrage near Rundh-Bhatha, Surat, Gujarat. The main objective of the study is to assess flow conditions and extract key hydraulic parameters influenced by the construction of the proposed barrage. The adequacy of energy dissipation of the barrage is one of the key challenges in the project for determining the hydraulic jump sweep out condition with crack gate opening during worst possible tail water condition.

Study Overveiw

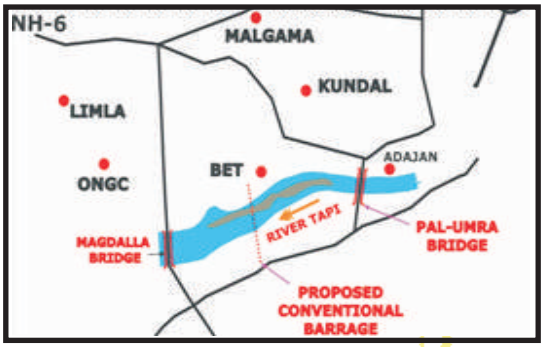
A geometrically similar physical model having a scale of 1:110 was constructed at CWPRS to simulate the hydrodynamicbehavior of the proposed barrage structure. The model represents approximately 3.5 km upstream and 1.5 km downstream of the barrage site, incorporating key features such asDeep river channels and marginal spill areas, Barrage structure including 57 bays (total length: 1017.50m), Guide bunds, bridges, and adjacent floodplain (up to 2.0 km wide), River cross-sections recreated at 200 m intervals, based on 2021 post-monsoon survey data, Smooth and rough plaster finishes simulated for bed and overbank roughness, Standing waves flume introduced flowdischarges at upstream, and the same discharges were verified using a Rehbock weir at downstream, Seven water level gauges at identified locations to record the water levels.As the 3D model was inadequate for detailed visualization of hydraulic jump formation and to assess performance of energy dissipation arrangements of the barrage, a 2D Froude-scaled model (1:45 GS) was constructed in a 1.2 m × 20 m glass flume, enabling detailed studies on hydraulic jump, stilling basin performance, and gated flow behavior through two full-width and two part-width bays.

Key Insights & Findings

- The proposed barrage alignment is found hydraulically satisfactory.
- The afflux due to barrage having a length of 1017.50 m, 57 bays spanwas negligible.
- If no post-construction human interventions are made in the vicinity of proposed barrage, the river regime will largely remain unchanged.
- In the 2D flume model, a sweep-out condition of hydraulic jump was observed for gate openings from 0.75 m to full (6.0 m) when the stilling basin level was at RL (-)2.5 m and FRL at RL 5.5 m.
- Further tests were conducted by incrementally deepening the stilling basin (in steps of 0.25 m and above) to evaluate jump containment.
- A stilling basin level at RL (-)3.5 m is deemed hydraulically satisfactory, with the hydraulic jump contained within 50% of the basin length, even under the worst-case tailwater conditions.

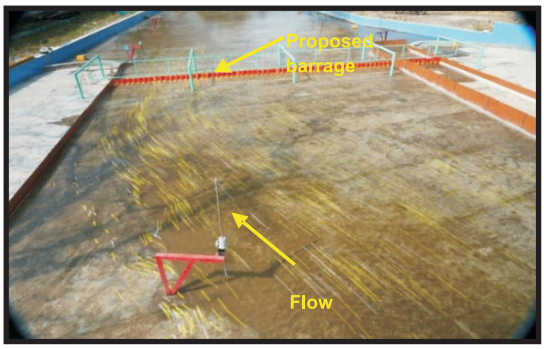
Impact & Achievements

- The study provides a validated design basis for the proposed barrage, ensuring stable hydraulic behavior across various operating scenarios.
- The model study enhances confidence in the structural and hydraulic safety of the barrage and ensures minimal ecological and morphological impacts in the vicinity of proposed barrage.
- Results support decision-making and approval processes for the final barrage design and construction phases.
- Provided a reliable scientific basis for decision-making and implementation of the barrage project.



Index map

Aerial view of 3D Model



Flow pattern in the vicinity of proposed barrage for discharge Q= 37066 m3/s

Typical view 2D Flume Model

Mathematical Model Studies to and to Evolving Suitable River Training Works for Manjhi/ Sarah Khad in Shahpur, Dist. Kangra, Himachal Pradesh

Project Overview

The Kangra Airport in Dharamshala, H.P. presently operates smaller aircraft such as Airbus A-318 and A220, due to limited runway length. To enhance the tourism potential, the Government of Himachal Pradesh has proposed the extension of the existing runway to accommodate larger aircraft such as ATR-72/ Q-400, and Airbus A-320. The extension plan involves constructing part of the extended runway over the ManjhiKhad, a prominent river in Kangra district that ultimately drains into the River Beas. Accordingly, a committee chaired by the Deputy Commissioner, Kangra, was constituted to oversee the proposal for the airport runway extension over ManjhiKhad. As part of this process, the Executive Engineer, Jal Shakti Division (JSD), Shahpur, Kangra, requested CWPRS, Pune to carry out the necessary hydraulic and hydrologic investigations.In view of this, CWPRS had undertaken the 2D mathematical model study to safely pass the flood below the proposed runway through a bridge. Based on the hydrological analysis, 200-year return period flood was arrived at and used in the 2D mathematical model studies to extract different hydraulic parameters in the vicinity of proposed bridge. In addition, 1D mathematical models (HEC-RAS) were also conducted to arrive at hydraulic design parameters for designing the suitable river training/ bank protection works for ManjhiKhad/ Sarah Khad and their tributaries. The key challenge in the study was to determine the hydraulic efficiency of the bridge and to divert the tributaries discharge in to main river before the bridge in confined approach.

Study Overview

2-D model was developed to simulate the flood routing and to assess the water levels for 200-year return period flood, particularly focusing on the hydraulic behavior in the vicinity of the proposed bridge below the runway.Supplementary 1-D model was used to determine hydraulic parameters and to design suitable river training/ bank protection works for ManjhiKhad, Sarah Khad, and associated tributaries. Historical rainfall and catchment characteristics were used to derive different period flood frequencies.

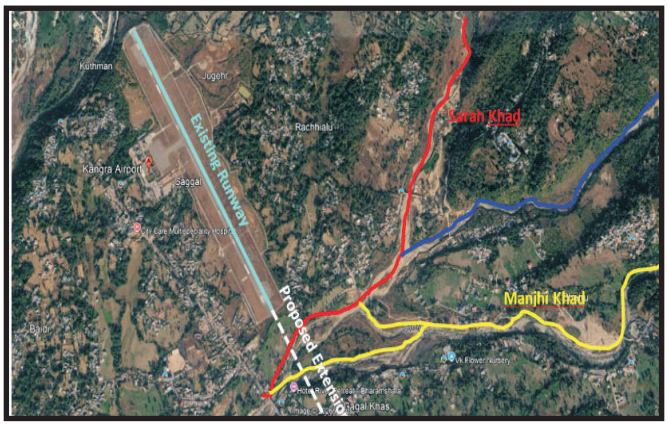
Key Insight & Findings

- The High Flood Levels (HFL) along the deep channel and left flank was well below the proposed runway formation level ensuring safe flood conveyance through the bridge.
- The revised bridge design, with a length of 380 m along the flow and 350 m across the Manjhi/Sarah Khads is found to be hydraulically adequate.
- To safeguard the embankment, Stone-filled gabion crates up to HFL plus free board, Toe wall of size 3 m (L) × 1.5 m (W) × 2 m (D), Launching apron of 5 m wide with crates having dimensions of 1.5 m (L) × 1.5 m (B) × 0.5 m (T) in a single layer was evaluated.
- To ensure uninterrupted irrigation water supply and prevent damage due to altered flow patterns, additional protection measures to the hill-side irrigation canals (Khuls) that run downstream of the proposed runway extension was suggested.

Impact & Achievements

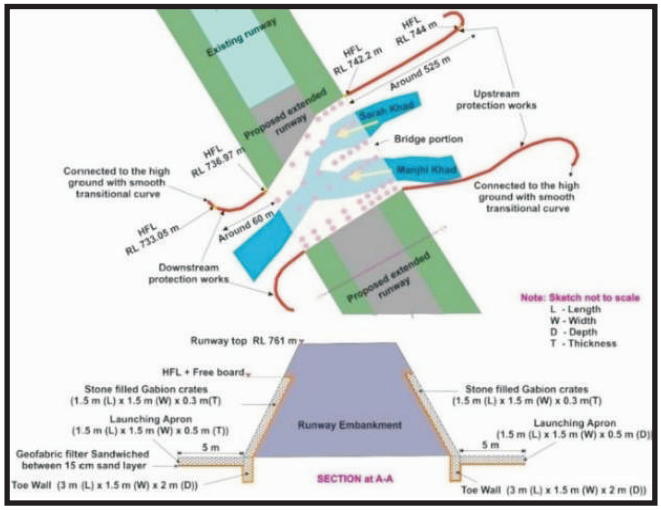
- The study confirms the hydraulic feasibility and safetyofthe proposed runway extension across ManjhiKhad.
- The findings support engineering design validation for critical components such as bridge span, runway elevation, and embankment protection.

- Ensures uninterrupted flood passage while maintaining structural integrity of the proposed airport runway extension.
- Lays the foundation for secure and expanded air connectivity, boosting tourism and economy in the region.



Proposed extension of Airport Runway

Typical view of Kangra Airport Runway



Proposed protection work for runway extension

Mathematical Model Studies for Evolving Flood Protection Measures along River Beas and its Tributaries in Tehsil Jaisinghpur and Sajanpur, District Kangra and Hamirpur, Himachal Pradesh

Project Overview

The Beas River originates at Beas Kund in the Pir Panjal range of the Great Himalayas and forms a natural boundary between Jaisinghpur (Kangra) and Sujanpur (Hamirpur) in Himachal Pradesh. While the right bank between Harsi-Pattan Bridge and Sujanpur town is largely flat with major settlements, the left bank is steep and erosion-prone. Due to its large catchment and high monsoon flows, the river frequently causes erosion and damage to land and property. In view of this, the Executive Engineer, IPH Division Thural, District, Kangra, Himachal Pradesh requested CWPRS to conduct mathematical model studies to route floods along the study reach and to derive hydraulic parameters for designing suitable flood and bank protection measures along the Beas River and its tributaries. The key challenge in the study was to provide the flood protection measures along the boulder rivers where the velocity exceeds 6 to 7 m/s.

Study Overview

1-D mathematical modelling of the Beas River and its tributaries in Tehsil Jaisinghpur and Sujanpur was carried out using HEC-RAS software. Available hydrological and topographical data were used to simulate existing flood conditions. 25, 50 and 100 year return period floods were used to extract different hydraulic parameters such as water levels, velocity, depth, and afflux, etc. The hydraulic performance of protection works proposed by the Project Authorities was evaluated, and optimized alignments were suggested by CWPRS to limit afflux within permissible range. Based on the model results, suitable river training and bank protection measures were suggested.

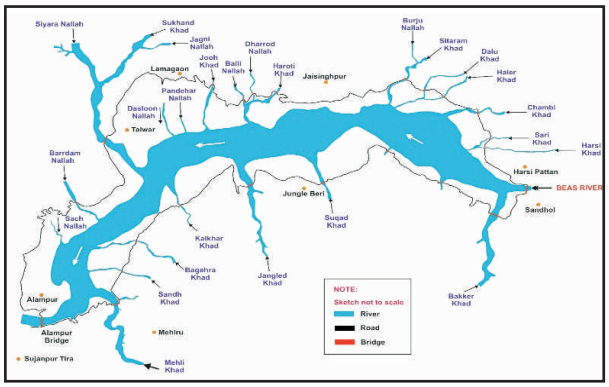
Key Insights & Findings

- The protection work alignment proposed by the Project Authorities resulted in higher and undesirable afflux compared to existing flood conditions. The modified alignment suggested by CWPRS effectively restricts affluxwithin permissible limits and is recommended for implementation.
- The reaches where sloping bank protection is not feasible,Gabion crate retaining walls with adequate toe protection and associated components are recommended. Regular post-flood inspection and maintenance of launching aprons were advised after passage of floods.
- At locations with land constraints or critical infrastructures,RCC/PCC retaining walls withmandatory provision of toe walls and launching aprons on the river side was recommended as per site condition.
- Streamliningthe mouth near the confluence of tributaries with the Beas River for improving the flow condition is suggested.The protection works along the main river is recommended to be extended into tributaries for about 300-500 m and all terminal ends shall be extended at least 5 m into the countryside with smooth transitions.
- To stabilize the longitudinal bed slope and prevent bank failure due to bed degradation, cross structures are proposed along the tributaries, with a maximum height of 1 m above the riverbed. Stone-filled gabion crate walls with high porosity were recommended to retain coarse sediments upstream, while allowing free drainage towards downstream.

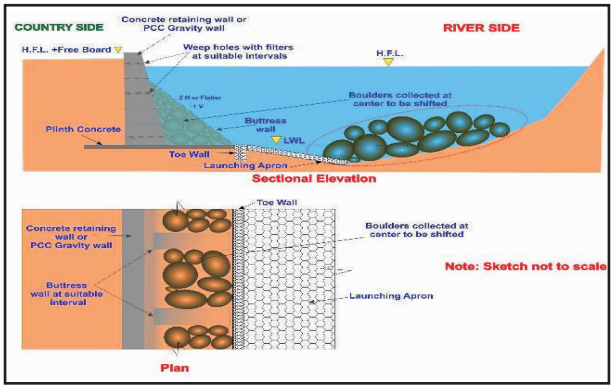
Impact & Achievements

- The study establishes a robust technical basis for evaluating anti-erosion processes along the Beas River and its tributaries.
- The recommended protection measures are effective in controlling afflux, mitigating bank erosion, and protecting agricultural land, habitations, and critical infrastructure, thereby contributing to improved flood risk management and sustainable river system management.

Typical view of bed composition of river Beas, Jaisingpur



Index Map



Typical sectional elevation and plan of RCC/ PCC retaining wall

Hydraulic Model Studies for the Arrah-chapra Bridge across River Ganga

Project Overview

Bihar Rajya Pul Nirman Nigam Ltd. Patna, addresses unstable, high-discharge flow in the River Ganga near the Arrah-Chapra bridge caused by parallel channels, uncontrolled flow interaction, and severe scour risk, necessitating effective river training works to ensure hydraulic stability and structural safety. In this context, Comprehensive Hydraulic model studies to assess the river training works for the existing 4 km long Arrah-Chapra road bridge across the River Ganga and to evaluate the impact of proposed guide bunds.

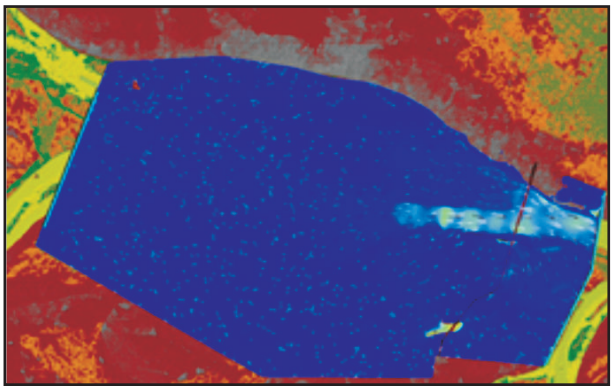
Study Overview

The study used an integrated hydraulic modelling approach combining 2D HEC-RAS mathematical simulations with a distorted-scale physical model (1:500 horizontal, 1:100 vertical) to evaluate flow behaviour, guide bund impacts, and river training effectiveness. Thus, for this study, a physical model and mathematical HECRAS-2D software are used. As per the scope of the study, the scenarios analyzed for varying discharge conditions (including design discharge), guide bund implementation, flow velocities, afflux, and associated scour behaviour to assess river training effectiveness.

Key Insights & Findings

- The Choti Ganga flow causes instability and scour risk near the bridge.
- Right guide bund improves flow alignment and reduces risk at main bridge.
- High velocities increase local scour, requiring protection works.
- Parallel flow from Choti Ganga is the key cause of scour.
- Guide bund reduces risk but slightly raises water level locally.
- High-velocity zones near pier and abutment are critical.
- Construction of right guide bund for flow control.
- Provide stone pitching, launching apron, and toe protection.
- Ensure protection works for both main and Choti Ganga sections.

Overall view of Physical model of Arrah Chapra Bridge



Overall view of 2-D HECRAS model of Arrah Chapra Bridge

Impact & Achievements

- Improved flow using the right guide bund.
- Reduction in adverse parallel flow, minimising scour risk at the main bridge.
- No significant afflux, ensuring hydraulic safety.
- Structural stability of bridge piers and abutments with proposed protection works.
- Identification and mitigation of high-velocity and high-scour zones.
- Reduction in submergence risk along the right bank flood plain.
- Technically sound design framework for river training works.

Hydraulic Model Studies for Reservoir Sedimentation of Kwar HE Project, Kishtwar, J&k

Project Overview

The Kwar Hydroelectric Project (540 MW), proposed by Chenab Valley Power Projects Pvt. Ltd. (CVPPPL) in Kishtwar district, is a run-of-river scheme on the Chenab River designed to harness significant hydropower potential in a steep gorge section. A 1:100 scale physical model study of the dam and reservoir was conducted to evaluate sediment management through sluicing under varying discharges and gate operations. Results indicate that sluicing efficiency improves with higher discharges, while selective two-gate operations create concentrated flow channels that enhance sediment transport and scouring effectiveness. Specific gate combinations perform better at different discharge ranges, and a regular monsoon-season sluicing strategy is recommended to maintain reservoir capacity and limit sediment entry into the intake, ensuring efficient long-term operation.

Study Overveiw

The Kwar Hydroelectric Project (540 MW) is a run-of river scheme on the Chenab River in Jammu & Kashmir, developed by CVPPPL. It involves constructing a 101 m high concrete dam to utilize a gross head of 103.10 m. To assess sediment removal through sluicing, physical model studies were conducted at CWPRS, Pune. A 1:100 geometrically similar scale model was used to simulate reservoir sluicing operations. This study is aimed to evaluate sluicing effectiveness under various discharges and sediment inflow conditions.The scope of the study is to investigate the reservoir sluicing and its impact on the sedimented river bed in the vicinity of the intake and dam. The detailed scope of work outlined for the study is to assess the sustainability of the reservoir capacity for various sluicing discharges, estimate the quantity of suspended sediment entering the power intake, assess the possibility of scour cone development, estimating the shape of the scour cone and observe the flow condition and sediment deposition in the vicinity of the power intake and spillway bays.

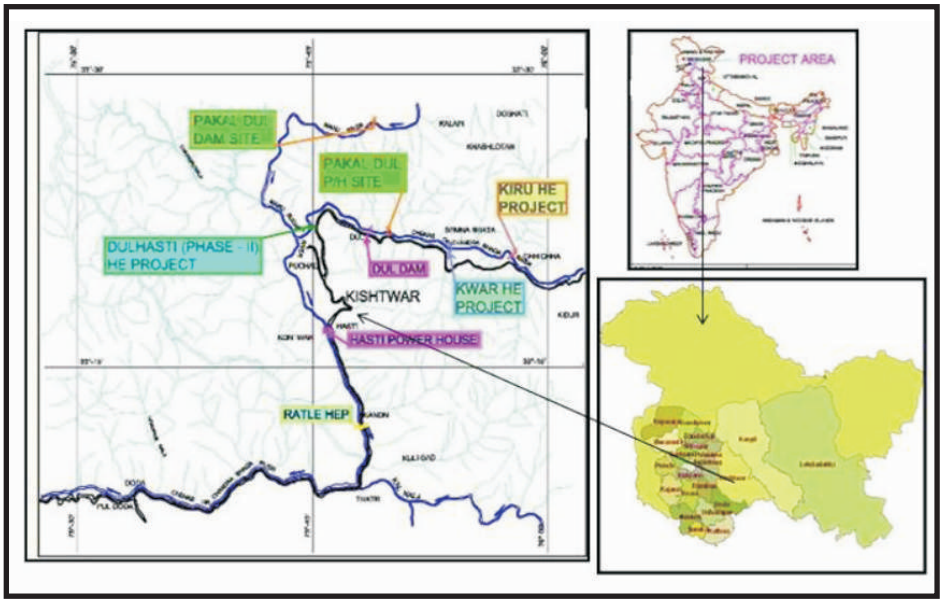
Key Insights & Findings

Simulations on a 1:100 scale physical model of the Kwar Dam and reservoir were conducted to assess the effectiveness of sluicing in managing sedimentation. The model covered a reservoir reach of 2600 m upstream and 500 m downstream, replicating the dam and intake structures.

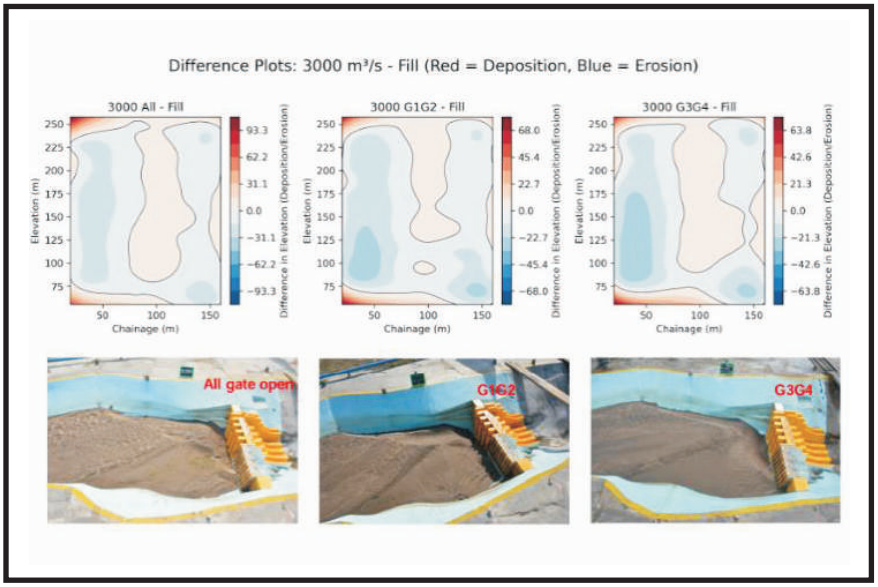
- The reservoir attains a stable sedimentation state after 5 years of operation.
- Sediment concentration at the intake depends on the discharge rate.
- High discharge creates a scour cone, reducing sediment near the intake.
- G3+G4 gates are effective for low flows; G1+G2 for higher flows.
- Sluicing impact is limited to 80-90 meters from the spillway axis

Imapact & Achivements

- Regular sluicing is necessary, especially during the monsoon season.
- Intake is vulnerable to sediment bypass; control is essential.
- Sediment concentration at intake can reach 506 ppm at high flow.
- Gate operation strategy helps optimize sediment management.



Location Map of KWAR HE Project



Different plots and photos after simulation for discharge of 3000 m3/s, for all gate conditions

Hydraulic Model Studies for Reservoir Sedimentation of Pakaldul HE Project, J&k

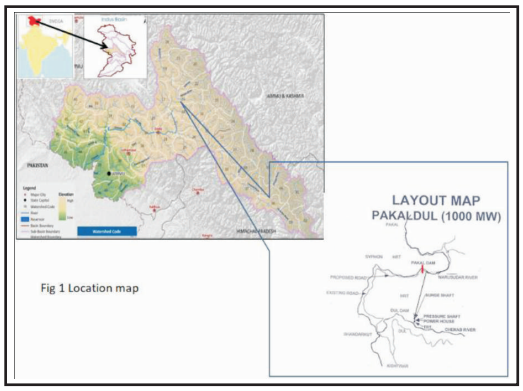
Project Overview

A 1:100 scale 3D physical model of the dam and reservoir was developed, covering about 3000 m upstream and 500 m downstream, incorporating key components such as the non-overflow section, surface and tunnel spillways, and power intake. Using hydraulic and sediment data from CWC gauging stations at Drangdhuran and Sirsi, sluicing and suspended sediment studies were carried out for discharges of 500, 700, and 900 m^3/s under both intake operating and closed conditions. The results indicate that effective sediment evacuation requires discharges of 700 m^3/s and above, with 900 m^3/s providing optimal scouring, while operation with the intake open enhances scour cone formation near the intake. Suspended sediment studies show that sediment entry into the intake remains significantly lower than inflow concentrations, with no notable deposition near the intake or dam structures, indicating efficient sediment management performance.

Study Overveiw

This study envisage findings and results of the physical model studies conducted by CWPRS, which provide critical insights into sediment behavior and support the design and operational planning of the PakalDul Hydroelectric Project.

The study involved a 1:100 scale 3D physical model of the dam and reservoir to evaluate sediment management through sluicing and suspended sediment behavior. Hydraulic and sediment data from CWC stations were used to simulate flows of 500, 700, and 900 m^3/s under both intake open and closed conditions. The analysis focused on scour cone formation near the spillway and intake, effectiveness of sediment evacuation, and the quantity of sediment entering the intake. Results showed that higher discharges improve sluicing efficiency, enhance scouring near the intake, and limit sediment ingress, with no significant deposition observed around critical structures.



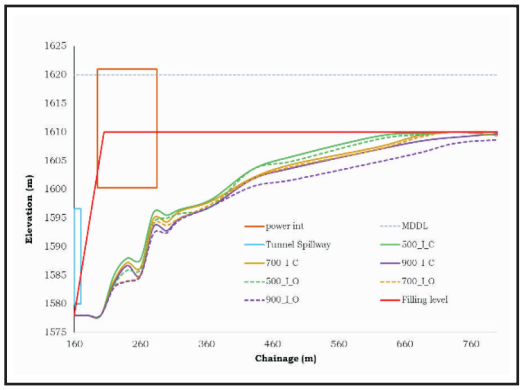
Location Map of Pakal Dul HE Project

Key Insights & Findings

- Open intake condition resulted in more effective and deeper scour compared to the closed condition.
- At 900 m^3/s, scouring was the most effective across all simulations, making it the optimal discharge for sediment evacuation

Impact & Achievements

- Reservoir sluicing operations are most effective during periods of higher discharge availability.
- Sluicing efficiency increases significantly as the discharge approaches 900 m^3/s.
- Higher discharge helps maximize sediment removal from the reservoir.
- Effective sediment removal assists in maintaining proper hydraulic functioning of the intake structures.
- Adequate sluicing also supports efficient operation of the spillway structures.



Typical L- section with Intake closed for 500, 700, 900 m3/s

Field Studies for Discharge Measurement for Verification of Live Flow Data Measuring System in the Tungabhadra Canal System At 25 Locations, Tungabhadra Project, Karanataka

Project Overview

Tungabhadra Canal telemetry system performance evaluation carried out by CWPRS for Tungabhadra Board across 25 locations. The study addresses accuracy of real-time discharge data, considering challenges suchas hydraulic variability, sedimentation, sensor alignment, and inaccessible stations. Objective was to validate telemetry data using ADCP and improve reliability for water management.

Study Overview

The present study is a field-based analytical investigation conducted during 2018-2025 to evaluate the performance of telemetry-based discharge measurement systems using reference measurements obtained from Acoustic Doppler Current Profilers (ADCPs), namely SonTek M9 and RiverRay. Discharge data were collected at selected monitoring locations under varying hydraulic conditions, encompassing a wide range of flow depths, velocities, and operational scenarios.

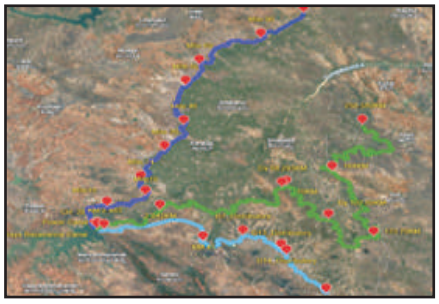
The study methodology involved comparing telemetry-recorded discharges with ADCP-measured values, computing percentage errors, and assessing measurement accuracy through statistical analysis. Long-term trend analysis was also carried out to examine the consistency and reliability of telemetry systems over time, providing insights into their suitability for continuous flow monitoring and water resources management applications.

Key Insights & Findings

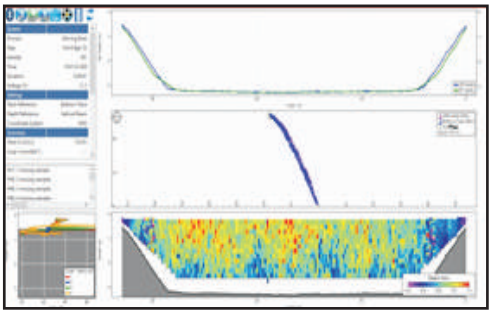
- Telemetry accuracy generally within ±5% at most locations
- Errors influenced by local hydraulics, sedimentation, and sensor placement
- Certain stations showed >10% deviation requiring recalibration
- Accuracy improved over time due to maintenance interventions
- Data gaps observed due to inaccessible telemetry stations
- ADCP established as reliable reference measurement method
- Recommendations: periodic calibration, rating curves, monitoring etc.

Impact & Achievements

- Improved transparency and efficiency in canal water distribution
- Supports sustainable irrigation and water resource management
- Enhances operational reliability of telemetry systems
- Provides framework for long-term monitoring and calibration
- Strengthens agricultural productivity and regional economy



Flow measurement by ADCP



Typical Transection by ADCP

Mathematical Model Studies to Assess the Sedimentation Effect of Vyasi Reservoir on the Tailwater of Lakhwar Dam, Uttarakhand

Project Overview

The Vyasi Hydroelectric Project (120 MW), developed by UJVNL on the Yamuna River in Uttarakhand, is a run-of-the-river scheme with a gross storage capacity of 13.69 MCM. The Lakhwar Dam is located about 5 km upstream of the Vyasi reservoir. Since the commissioning of the Vyasi reservoir in 2021, significant sedimentation has been observed, raising concerns regarding its impact on the tailwater levels (TWL) of the proposed Lakhwar Dam. To assess this impact, CWPRS carried out detailed one-dimensional (1D) numerical modelling studies using HEC-RAS (version 6.6). The model was calibrated using observed hydraulic and sediment data and successfully reproduced the sediment deposition observed in the July 2024 bathymetric survey. The study indicates that sedimentation has substantially reduced the discharge carrying capacity near the Tail Race Tunnel (TRT) outfall, resulting in increased water levels during high-flow conditions. Various reservoir operating scenarios, dredging options, and the effect of Lakhwar Dam operation were analysed. The study concludes that operating the reservoir at lower levels during the monsoon is hydraulically more favourable for sediment management, while dredging provides only short-term improvement. The future operation of the Lakhwar reservoir, with high sediment trap efficiency, is expected to significantly reduce sediment inflow into the Vyasi Reservoir and improve long-term hydraulic performance.

Study Overveiw

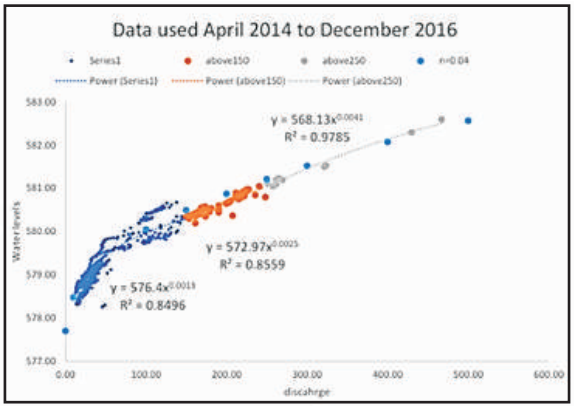
This study was conducted to evaluate the impact of sedimentation in the Vyasi Reservoir on the tailwater levels of the proposed Lakhwar Dam. One-dimensional numerical modelling using HEC-RAS was carried out to analyse hydraulic and sediment transport behaviour under various operating conditions. The study assessed changes in discharge capacity, equilibrium sedimentation, and the effectiveness of dredging and reservoir operation strategies, providing inputs for safe and efficient long-term operation of the Lakhwar-Vyasi system.

Key Insights & Findings

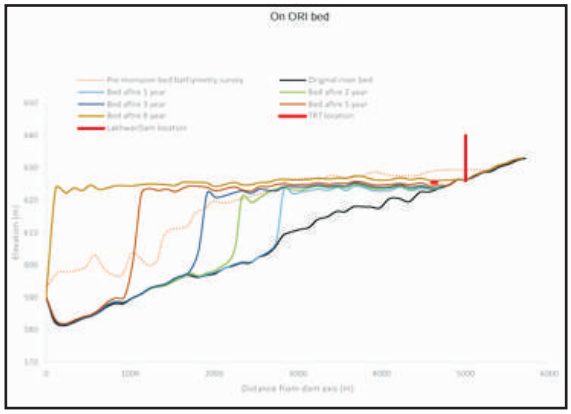
- Sedimentation has reduced discharge capacity and increased tailwater levels near the TRT.
- Rule-curve operation during monsoon is more effective for sediment management.
- Dredging offers limited short-term benefit; long-term improvement depends on Lakhwar operation

Impact & Achievements

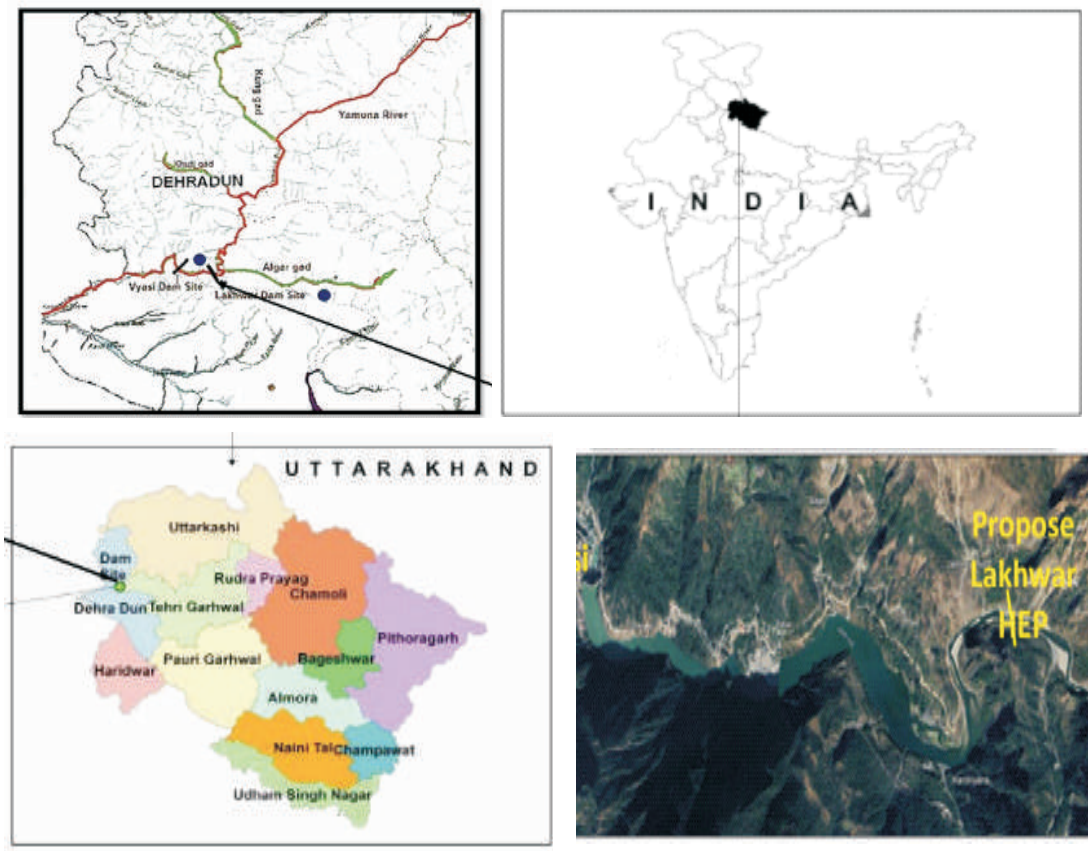
- The study provides a reliable basis for assessing tailwater levels and flood safety of the Lakhwar-Vyasi system.
- It supports informed decision-making on reservoir operation, sediment management, and dredging measures.
- The findings help in improving long-term operational efficiency and risk mitigation for both projects.



Hydrodynamic model Calibration



Long term sediment deposition pattern when reservoir operated on MDDL using Lakhwar 10 daily data from 1975 to 2022 and Exhibit I eq



Location Map

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2	Measurement of discharges at various locations of Express canal in Ekrukh LIS, Tal. North Solapur, Dist. Solapur, Maharashtra	6386
3	Hydraulic model studies for reservoir sedimentation of Kwar H. E. project, Kishtwar, J&K.	6396
4	Physical model studies for reservoir sedimentation for Pakal Dul H. E. project, J&K.	6397
5	Site inspection report for assessing requirement of right guide bund for proposed construction of high level RCC bridge across river Kosi between Kachurdeva chowk and Dengrahi ghat in district Saharda, Bihar	6406
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19	Mathematical model studies to assess the sedimentation effect of Vyasi reservoir on the tailwater of Lakhwar dam, Uttarakhand	6510
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RIVER AND RESERVOIR SYSTEMS MODELLING

Divisions

- Hydrometeorology
- River Rejuvenation
- Disaster Management and Planning

Areas of Specialization/ Expertise

- Rainfall-Runoff and Flood Estimations for River Catchments
- Soil Erosion - Sediment Yield Analysis of River Catchments
- Hydrologic Analysis of Dam Projects
- Flood Forecasting, Extreme Value Analysis (for Peak and Low Flows)
- Water Availability Studies
- Dam Break Flood Analysis
- Determination of Safe Grade Elevation against flooding & Development of Storm Water
- Drainage System for Power Plants
- Nala Diversion studies
- Physico-chemical analysis, plankton studies
- Mathematical modelling for River and reservoir water quality

Major Clients

- CIDCO, Mumbai
- NPCIL
- WRD, Maharashtra
- Reliance Industries Limited
- Tarapur Atomic Power Station, Maharashtra
- NTPC
- State Irrigation Departments
- Satluj Jal VidhyutNigham Ltd. (SJVNL)

Hydrological Re-assessment for New Railway Line Section between Murkongselek (Assam) and Pasighat (Arunachal Pradesh) for Northeast Frontier Railway, Guwahati

Project Overview

North East Frontier Railway (NEFR), Guwahati is executing a work on laying new railway line between Murkongselek (Assam) and Pasighat (Arunachal Pradesh) for a length of 26.2 km where the alignment of proposed line traverses in the vicinity of foothills with distance varying from 2 to 10 km in Eastern side of Himalayas. With the construction of railway embankment of average height 4.5 meters, the discharge generated will not able to flow freely and get obstructed by railway embankment. Accordingly, NEFR has planned for providing adequate waterway opening in the embankment, however considering the importance the project from strategic point of view, the adequacy of waterway is to be ensured to avoid washouts/breaches of embankment during heavy rains.

Study Overview

Hydrological re-assessment studies for the proposed Murkongselek and Pasighat railway line was carried out. For this purpose, the locations of proposed railway bridges on river/ streams that are passing through the new railway line between Murkongselek and Pasighat was provided by NEFR. Apart from this, CWPRS downloaded the 30 m Grid NRSC-Carto DEM data from Bhoonidhi Portal, collected the rainfall data of Pasighat Aero (observatory) rain-gauge station from India Meteorological Department and requisite toposheets of influence catchments of the study area of from Survey of India. The annual 1-day maximum rainfall series for Pasighat Aero (obsy) rain-gauge station was used to estimate the extreme (i.e., 1-day maximum) rainfall depths for different return periods by adopting Extreme Value Type-I distribution wherein the parameters were determined by using Maximum Likelihood Method. By using the extreme rainfall depths and physiographic characteristics of the delineated catchments derived from ArcGIS tool, the peak flood discharge (PFD) of influence stream catchments for 25-year, 50-year, 75-year and 100-year return period was computed by adopting rational formula for small catchments (catchment area less than 25 km2) as per the guidelines of RDSO Report RBF-16 whereas the procedures of Synthetic Unit Hydrograph described in CWC Flood Estimation Report for North Brahmaputra Basin (Subzone-2a) were adopted for estimation of PFD for than minor/ small catchments (catchment area more than 25 km2). The estimated PFDs were further used to determination of linear waterway for railway bridges located on the proposed railway line by applying the procedures as described in Paragraph 4.5.3 (Lacey's formula) of Indian Railway Standard Code of practice for the design of sub-structures and foundations of bridges.

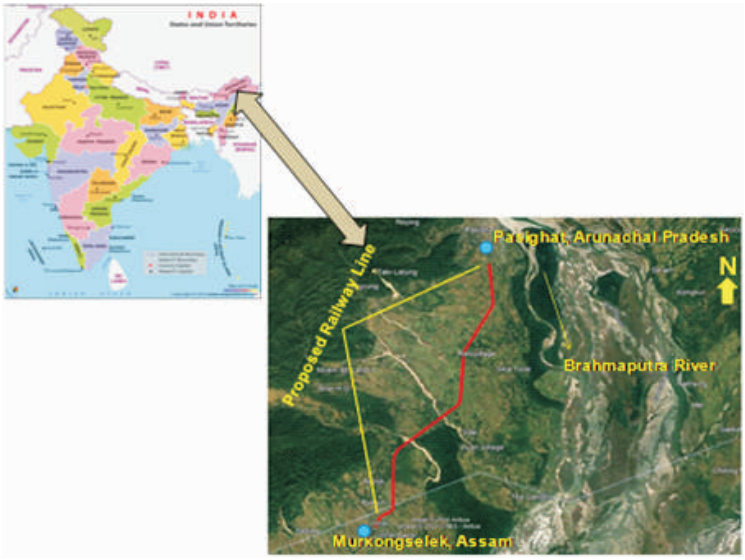
Key Insights & Findings

- By applying rational formula, the 25-year, 50-year, 75-year and 100-year return period PFDs for a railway bridge located on Pogu Korong river were computed as 402.49 m3/s, 453.78 m3/s, 484.07 m3/s, 505.77 m3/s respectively. Likewise, for a railway bridge located on Skaling Korong river, the 25-year return period PFD was computed as 241.93 m3/s whereas 272.76 m3/s for 50-year, 290.97 m3/s for 75-year and 304.01 m3/s for 100-year.
- By applying the SUH approach, the 25-year, 50-year, 75-year and 100-year return period PFDs for a railway bridge located on Leko river was computed as 1001.27 m3/s, 1110.88 m3/s, 1174.66 m3/s, 1219.99 m3/s respectively. Likewise, for a railway bride located on Mingo Korong river, the 25-year return period PFD was computed as 519.78 m3/s whereas 576.15 m3/s for 50-year, 608.94 m3/s for 75-year and 632.22 m3/s for 100-year.
- By applying Lacey's formula, the linear waterway width for the railway bridge located on Leko river was computed as 153.0 m for 25-year return period PFD whereas 161.16 m for 50-year, 165.72 m for

75-year and 168.89 m for 100-year. Likewise, for a railway bridge located on Pogu Korong river, the linear waterway width was computed as 97.01 m for 25-year, 103.0 m for 50-year, 106.39 m for 75-year and 108.74 m for 100-year return period PFDs.

Impact & Achievements

- The study focused on hydrological re-assessment including estimation of PFD at various minor and major railway bridges located on various stream in the proposed new railway line section between Murkongselek (Assam) and Pasighat (Arunachal Pradesh).
- The study suggested that proper arrangements are to be made for easy flow of water in irrigation field channels, those were crossing across proposed railway line.
- The results presented in this technical report may be useful for carrying out the task related to the proposed railway line project between Murkongselek and Pasighat.



Location map of the study area

Dam Break Analysis and Providing Inputs for Emergency Action Plan for Kistrampally Balancing Reservoir, Telangana

Project Overview:

The Irrigation & Command Area Development (I&CAD) Department under the Government of Telangana is implementing the Dindi Lift Irrigation Scheme (DLIS). This scheme aims to address the critical challenges of fluorides contamination and drought in Devarakonda and Munugodu constituencies of Nalgonda district, as well as Kalwakurthy constituency of Mahabubnagar district in Telangana state. The DLIS is designed to provide irrigation and drinking water facilities to severely affected regions. The total area of 3,41000 acres is proposed to be irrigated by lifting 30 TMC of water from the foreshore of Srisailam reservoir to Dindi reservoir during flood conditions. 5.686 TMC storage is generated by this balancing reservoir formed by nine earthen bunds. In case, any of nine earthen bunds get breached, the downstream area may experience heavy floods. This study consists of dam beak analysis and inputs for emergency action planning in respect of Kistarampally reservoir. The aim of the study was to estimate the dam break flood hydrograph which will help in preparation of Emergency Action Plan for the Kistrampally reservoir.

Study Overview:

The terrain data were extracted from the Digital Elevation Model (DEM), while reservoir storage data came from the Elevation Area Capacity curve, and structural details from salient features of the earthen bund. 2 D mathematical model simulations under level pool scenario were conducted using HEC-RAS software. Storage of the Kistrampally reservoir and FRL of Pulichintala reservoir were applied as upstream and downstream boundary conditions. Preliminary runs tested breaching scenarios to identify worst flooding, followed by final unsteady flow simulations for the worst case using HEC-RAS.

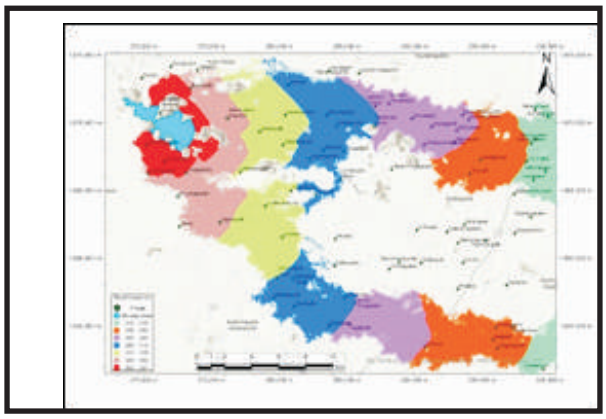
Key Insights & Findings:

- The maximum discharge experienced bythe downstream area 40 km downstream of the dam in 4hrs.
- The villages and community places located within 40 km from the dam are severely affected by flood as it arrived in this area in less time with maximum magnitude.

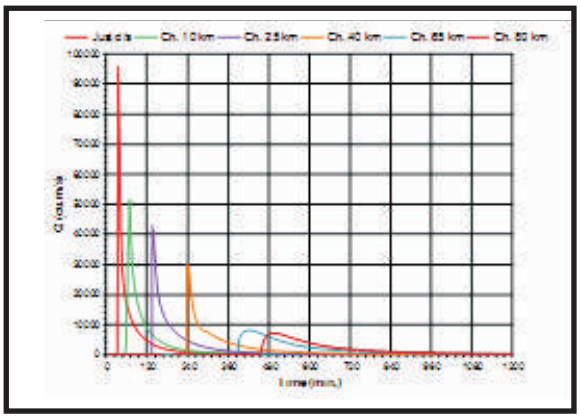
For the study area from Ch. 90 km to Ch.170 km villages, community places and industries are affected by dam break flood. In this region, the area has also inundated mainly due to the maximum discharge released from Nagarjunsagar dam.

Impact & Achievements:

- Dam Break Analysis is carried out using mathematical model study for identification of potential flooding on the downstream of the dam.
- The arrival time of the flood, velocity and water depth at different places in the inundated area have been estimated.
- The output of the dam break analysis is used as input for preparation of Emergency Action Plan for the dam which will be helpful for authorities for evacuation of the people, management of resources and equipment under emergency situation due to breaching of the dam.



Inundation map of downstream of Kistarampally Reservoir



Dam break flood Hydrographat different locations downstream of Kistrampally reservoir

Sr. No.	Technical Report Title	Technical Report No.
1	Dam break analysis and providing inputs for emergency action plan for Shivannagudem balancing reservoir, Telangana	6388
2	Studies for diversion of nala passing through proposed integrated steel plant(ISP) at Nimdih, Saraikela, Jharkhand	6390
3	Dam break analysis and providing inputs for emergency action plan for Kistarampally balancing reservoir for SRVR DLIP, Nalgonda District, Telangana	6395
4	Desk studies for hydrological re-assessment of the new railway line between Indore Budni, MP for Rail Vikas Nigam Ltd. Bhopal	6416
5	Hydrological re-assessment for new railway line section between Murkongselek (Assam) and Pasighat (Arunachal Pradesh) for Northeast Frontier Railway, Guwahati	6459
6	Studies for diversion of ChatkariJore and TisraJore at Lodna Area, Dhanbad, Jharkhand	6504
7	Area drainage studies for the box-5 of NTPC rail bridge(Laxman Nallah) at Kuchena railway sliding	6534

RESERVOIR AND APPURTENANT STRUCTURES

Divisions

- Spillways and Energy Dissipators
- Control Structures and Water Conductor Systems

Areas of Specialization/ Expertise

- Spillways and energy dissipators
- Water conductor systems including head race & tail race channels, surge tank,
- penstock
- Power intake
- Sluices & outlets
- Various types of gates

List of Clients

- NHPC
- WAPCOS
- NJPC
- State Governments
- SJVNL
- Chenab Valley Power Projects Ltd, (CVPPL)
- Brahmaputra Board
- Uttarakhand Jal Vidyut Nigam Ltd. (UJVN Ltd)

Additional Hydraulic Model Studies For Modified Design Of Spillway With Stilling Basin As Energy Dissipator Of Punatsangchhu-I H.E. Project, Bhutan, 1:70 G.S. 3-D Comprehensive Model

Project Overview

Punatsangchhu-I Hydroelectric Project, located on the Punatsangchhu River in Wangdue Phodrang Dzongkhag, western Bhutan, envisages a 136 m high concrete gravity diversion dam for generation of 1200 MW power. The project includes an orifice spillway with five sluices (9.6 m × 17.4 m) designed to safely pass a Probable Maximum Flood of 11,500 m^3/s and a GLOF of 4,300 m^3/s, with a stilling basin provided for energy dissipation. Hydraulic model studies were carried out by the Spillways and Energy Dissipators Division, CWPRS, Pune, sponsored by M/s WAPCOS Ltd., Gurgaon, to evaluate approach flow conditions, spillway capacity, water surface profiles, and the performance of the stilling basin.

Study Overview

The existing comprehensive model was modified to incorporate a stilling basin type energy dissipator to protect the right bank near the dam. Studies on the spillway and energy dissipator were carried out using a 3-D comprehensive physical model. Based on the findings, it is recommended to raise the top elevation of the training wall and remove the divide wall in the stilling basin to improve performance, particularly for lower discharges.

Key Insights & Findings

- Hydraulic model studies (1:70 scale) confirmed adequate spillway discharge capacity up to 15,800 m^3/s (PMF+GLOF), considering available freeboard.
- Stilling basin performance was satisfactory up to 6,900 m^3/s, with a stable submerged hydraulic jump contained within the basin.
- At higher discharges (>6,900 m^3/s), adverse conditions such as high turbulence, return flows, and impact on the right river bend were observed.
- The intensity of turbulence and volatile flow conditions in the stilling basin was found to be slightly reduced in the absence of divide walls.

Impact & Achievements

- Established adequacy of spillway capacity up to PMF (15,800 m^3/s) through detailed hydraulic model studies, ensuring safe flood handling with available freeboard.
- Identified performance limits of the stilling basin, confirming satisfactory energy dissipation up to 6,900 m^3/s and highlighting issues at higher discharges.
- Provided design improvements (raising training wall, removal of divide wall) to enhance flow conditions and protect the right river bank, contributing to safer and optimized spillway performance.

View of Dry Model from Downstream (without divide walls)

Flow conditions downstream of Spillway for Q = 6,900 m3/s (Gated flow) (without divide walls)

Computational Fluid Dynamic Analysis Of Downstream Surge Gallery Arrangements For Water Conductor System Of Dulhasti Hydro - Electric Project (260 MW) Stage II, J&K

Project Overview

Dul Hasti Stage II is a run-of-the-river type development located on the Chenab River in the Kishtwar district of Jammu and Kashmir. It consists of an underground powerhouse cavern, 100 meters long, 19.5 meters wide, and 52 meters high, will house two 130 MW turbine units. Both units of the plant will be equipped with Francis turbines with a rated net head of 135.1 m. The turbine is followed by two D-shaped draft tubes 6 m in diameter and 50 m long and two branch TRTs of 6 m in diameter and 73 m and 95 m in length. The tailrace system is provided with a D-shaped tailrace surge gallery/tunnel of size 6.0 m x 6.5 m, 549 m long, having a slope of 1 in 13.6. The main tailrace tunnel is 215 meters long, 8.5 meters in diameter, and horseshoe-shaped.

Study Overview

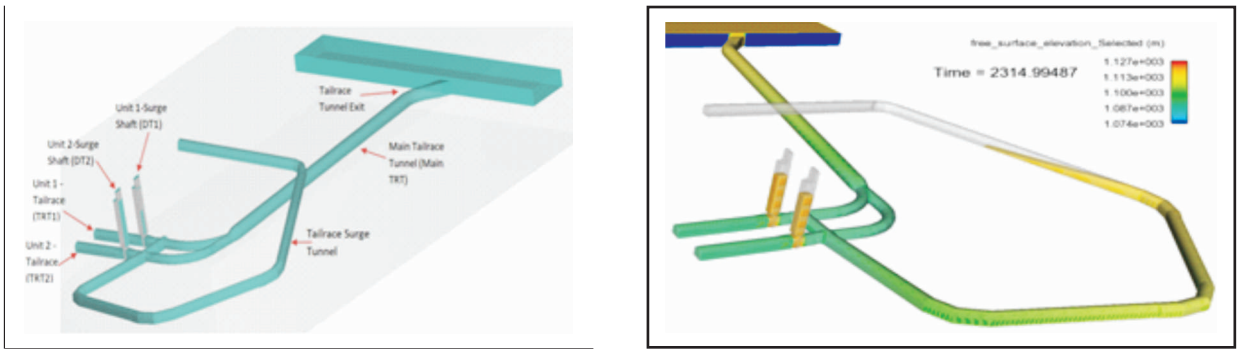
The study was carried out using commercial Computational Fluid Dynamics (CFD) software FLOW-3D. The studies aimed to determine the magnitude of surges corresponding to load conditions specified by NHPC Limited and IS 7396 (Part 1): "Criteria for Hydraulic Design of Surge Tanks".

Key Insights & Findings

- The highest pressures recorded in the tailrace tunnel for Unit 1 and Unit 2, both near the draft tube. The tailrace tunnel beyond Y junction experiences a maximum pressure.
- Throughout all load conditions, the minimum pressures in both surge shaft units fluctuated between 1100 and 1115, with Unit 1 consistently showing slightly lower values than Unit 2.
- Under IS4 load conditions, the tailrace tunnel of Unit 1 reached a minimum negative pressure of 1100.87 m, while Unit 2 recorded a minimum of 1101.23 m near the draft tube.
- The Y-junction and TRT-surge tunnel junction experienced negative pressures. Particular attention must be given to load conditions like IS2 due to the elevated pressure levels, which could impose significant stress on the system.

Impact & Achievements

- The studies revealed that the sizes of surge shaft and surge tunnel were found suitable under specified load conditions given by NHPC limited and as per criteria specified in IS 7396 (Part 1).



Pictorial and CFD view of water level variations in surge shafts

Physical And Numerical Studies For The Second Revision Of The Modified Alternative-III Design Of The Tunnel Spillway Of Pakal Dul H.E. Project, J&K1:25 Scale, 3-D Comprehensive Model

Project Overview

The PakalDul (Drangdhuran) Hydroelectric Project is a 1000 MW power project on the Marusudar River, a tributary of the Chenab, in Kishtwar district, Jammu & Kashmir. It is being developed by Chenab Valley Power Projects (P) Ltd. (CVPPL) under NHPC. The project includes a 167 m high concrete-faced rockfill dam with two horseshoe-shaped tunnel spillways, each 10.5 m in diameter and 456 m long. Together, these spillways are designed to safely pass floodwaters of up to 3530 cumec at a maximum water level of 1703 m. One of the main challenges is that the tunnel spillway usually operates without gates at the minimum drawdown level of 1620 m. At this level, water flows at very high speeds, which can cause damage to the tunnel lining due to cavitation. This study aimed to assess the performance of the latest Modified Alternative-III aerator design. The revision included changes to the ramp geometry, the addition of a lateral slope in the aerator shaft openings, and the removal of flow disturbances related to gate grooves. The objective of the study was to assess the performance of aerator and to ensure safe operation by providing enough air into the tunnel to prevent cavitation throughout its length.

Study Overview

Physical model studies were conducted on a 1:25 scale, 3-D comprehensive model of a single tunnel spillway fabricated in transparent Perspex sheet, using Froudian similitude criteria. Numerical simulations were carried out using FLOW-3D CFD software. Studies were performed for two scenarios: (i) ungated operation at MDDL El. 1620 m both physical and numerical models; and (ii) ungated operation at FRL El. 1700 m in numerical model only. Parameters assessed included flow conditions in the gate shaft and aerator zones, water surface profile, pressure profile, cavitation index, jet length, and air concentration along the tunnel centreline.

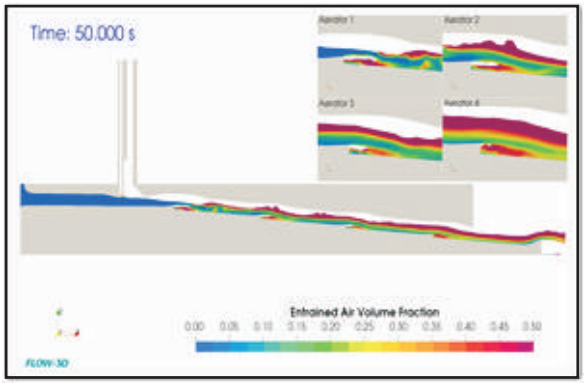
Key Insights & Findings

- The second revision design eliminated the turbulent expanding flow and rising jet impingement on the trunnion beam area, which had plagued earlier designs; smooth flow with a clear gap below the trunnion beam was confirmed in both models.
- For MDDL operation (El. 1620 m), the design performed satisfactorily; open channel flow was maintained throughout the tunnel post-gate shaft, with approximately 50% free flow depth at Aerator No. 1 and entrained air concentration of 4-24% along the tunnel bottom which is sufficient to suppress cavitation damage.
- Cavitation indices remained above the critical threshold of 0.2 (Falvey, 1990) along the entire tunnel length downstream of the gate shaft up to the flip bucket invert, except at the bucket lip.
- Maximum depth-averaged velocity was 29 m/s at MDDL and 46.3 m/s at FRL conditions.
- For FRL ungated operation (El. 1700 m), flow conditions downstream of Aerator No. 1 were found unsatisfactory. Due to the water surface contacted the tunnel roof, aerators 2, 3, and 4 were completely submerged, and intermittent air entrapment alternated conduit and open-channel flow, posing a structural risk to the tunnel lining.
- Recommendation: The tunnel spillway must not be operated in fully ungated mode at FRL El. 1700 m; gradual gate opening should be adopted. Gated operation studies across varying reservoir levels up to FRL, using both physical and numerical models, would be essential before finalizing the operational protocol. Tunnel lining in aerator impingement zones must be designed for high-velocity impact loads.

Impact & Achievements

- The iterative physical-numerical approach, spanning five years (2020-2025) and three design revisions, successfully resolved critical flow instability in the gate shaft-to-aerator transition zone, a problem that persisted through two earlier design alternatives.
- The study directly informed structural design decisions by identifying the flip bucket lip and aerator impingement zones as cavitation-vulnerable locations requiring reinforced lining.
- Physical-numerical model agreement for discharge was within 9% at MDDL, validating numerical model parameters for FRL extrapolation, which is demonstrating CWPRS's capability in hybrid modelling for high-head tunnel hydraulics.
- The study provided actionable operational guidance to CVPPL/NHPC, restricting ungated full-opening at FRL and mandating gated operation protocols, which is a decision with direct bearing on the structural safety of a national infrastructure asset.
- Aerator design modifications recommended by CWPRS (ramp lengthening from 8 m to 10 m, 15° lateral slope in shaft opening, raised top-level of lower opening) were accepted and incorporated by NHPC into the project design.

Physical model studies



Numerical model studies

Hydraulic 3D Comprehensive Model Studies for the assessment of Scour Downstream of Spillway of Kiru H.E. Project, Jammu & Kashmir

Project Overview

The Kiru H.E. Project is under construction as a run-off-the river scheme on the Chenab River in Kishtwar district of Jammu and Kashmir. The project envisages construction of 135 m high Concrete gravity dam to generate 624 MW of power utilizing a design head of 118 m at an underground power house. The main spillway consists of 4 low-level sluices of 9 m (W) x 12.5 m (H) to pass Probable Maximum Flood (PMF) of 10,196 m3/s. The Full Reservoir Level (FRL) is at El. 1515 m and the Minimum Draw Down Level (MDDL) is at El. 1504 m. The crest of orifice spillway is at El. 1467.5 m. The high-level spillway comprises of two spans one each on left and right side of size 9 m (W) x 16.6 m (H) with crest level at El. 1498.4 m. Ski-jump bucket has been provided as energy dissipator for both lower-level and higher-level spillways.

Study Overview

Physical model studies were carried out on a 1:75 GS scale 3D comprehensive model to assess the performance of ski jump bucket and to optimize the layout of the Plunge pool for spillway, while disposing off the designated flood through its four lower- level sluices and two upper- level spillways.

Key Insights & Findings

- The depth of scour varies with the operation schedule of gates.
- The deepest scour observed was between Ch. 245 m to Ch. 295 m. Accordingly, the recommended minimum length of plunge pool ranges between Ch. 220 m to Ch. 300 m.
- It was recommended the design of plunge pool may be decided by giving due consideration to the frequency of flood occurrence and geological/ geotechnical nature of the rock at the site.

Impact & Achievements

- The Kiru H.E. Project has been approved under Indus Water Treaty 1960 to harness the waters of the Chenab River.
- Hydraulic design of layout of the plunge pool for dam spillways on the narrow rivers of Himalayan region is challenging.
- The research facilitated the optimization of pre formed plunge pool, for the effective performance of spillway.

Flow conditions D/s of spillway in the scour pit

Visit of CWPRS Scientist to Dam site, J&K

Hydraulic 2D Sectional Model Studies for the Right main Canal (RMC) Head Regulator of Polavaram Irrigation Project, Andhra Pradesh

Project Overview

Polavaram Irrigation project is a multipurpose project on the River Godavari, in Eluru District of Andhra Pradesh. The project is envisaging irrigation benefits to 7.2 lakh acres and generation of 960 MW Hydroelectric Power. It is proposed to divert 80 TMC of water through the Right Main Canal through the Head Regulator (also called P- Regulator), which is designed to pass a discharge of 1025 m3/s. The head regulator has 9 vents of size 8 m (W) x 5.8 m (H) with crest at El. 35.5 m.

Study Overview

Hydraulic model studies were conducted for the original design of Right Main Canal Head Regulator with stilling basin, on 1: 20 scale (G.S) 2-D sectional model to assess its performance while passing the designated discharge.

Key Insights & Findings

- The studies indicated that the discharging capacity of the Head Regulator is sufficient since discharge of 1658 m^3/s could be passed at MDDL El. 41.15 m and 2920 m^3/s could be passed at FRL El. 45.72 m, when the D/S FSL was kept at El. 41.055 m.
- Fully submerged hydraulic jump with no visible turbulence was forming in the stilling basin due tohigh D/S FSL level at El. 41.055 m.
- There is possibility of hydraulic jump sweeping out of the stilling basin, before the built up of tail water levels, due to higher invert level and smaller height of end sill of the stilling basin. So, precautions must be taken in gradual raising of the D/s water levels.
- It was recommended to provide sufficient length of apron, firmly anchored to the sound rockdownstream of end sill, to avoid undermining of the stilling basin for hydrodynamic flows.

Impact & Achievements

- The Right Main Canal Head Regulator will be instrumental in diverting the 80 TMC of flood water during the flood season.
- The studies ensured that the head regulator would divert the designed discharge through the Right Main Canal.
- Optimisation of the flood releases into the Right Main Canal can be formulated based on gate operation studies.

Flow condition in theStilling Basin

Visit of CWPRS Scientist to RMC Head Regulator

Mathematical model studies for surge analysis of Dhangarwadi lift irrigation schemes Stage-II (North and South), Tal. Karad, Satara district, Maharashtra

Project Overview

The Dhangarwadi Lift Irrigation Scheme is situated at Arphal left bank canal (Ch. of 58.225 m) of Kanhar dam in the Karad Taluka of Satara district in Maharashtra. This scheme consists of two stages I and II. The stage I scheme lifts the water from Arphal canal through pumping to delivery chamber (DC1) which is of 2510 m away from the lift point. From the DC1, gravity pipe line of 2950 m length and diameter of 1100 mm has been laid up to the stage II pump house. From the Stage -II pump house, the water lifted through inline pumps from source to two delivery chambers towards North and South sides of Dhangarwadi lift irrigation scheme stage II. The water is then supplied through network of canals by gravity to the command area. CWPRS conducted mathematical model studies for surge analysis of rising main.The project authority entrusted the mathematical model studies for surge analysis of the rising mains of North and South side of Dhangarwadi Stage II scheme to CWPRS.

Study Overview

The scope of work includes providing surge protection devices to mitigate positive and negative water hammer pressures and their tentative locations on the rising mains of Dhangarwadi Lift Irrigation Scheme, Stage -II. The studies were carried out to evaluate transient pressure responses, analyzeworst-case scenarios that could occur in the pipeline system without any surge protection, effectiveness of surge protection devices. Transient Modelling is carried out without and with surge protection.

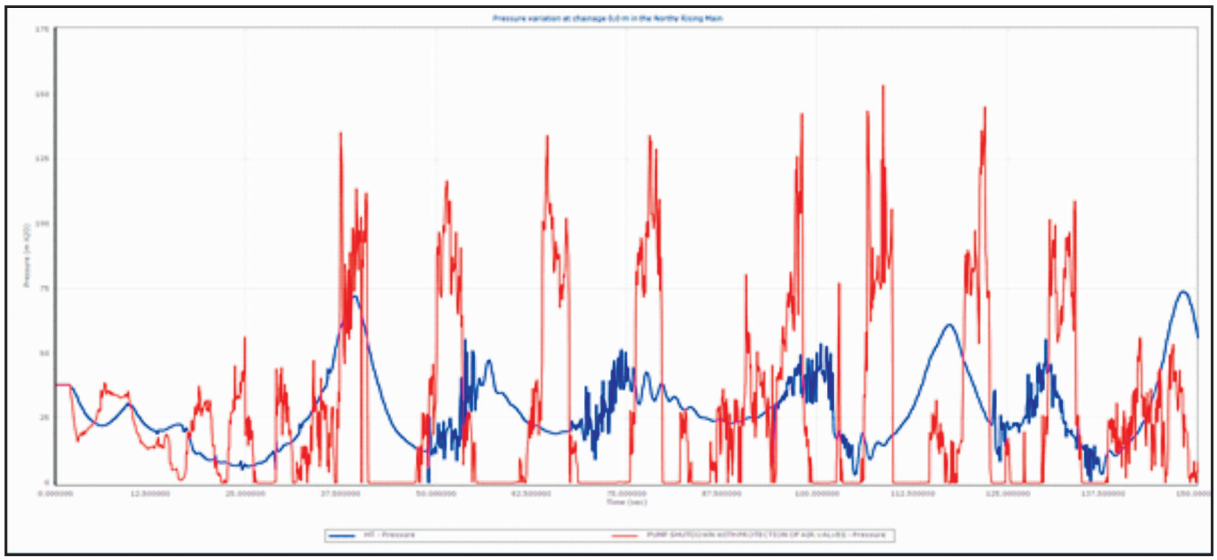
Key Insights & Findings

Based on multiple transient modelling simulations, the study recommends the following options for surge protection to mitigate the transient pressures in the rising main during critical scenario i.e., tripping of pumps due to power failure.

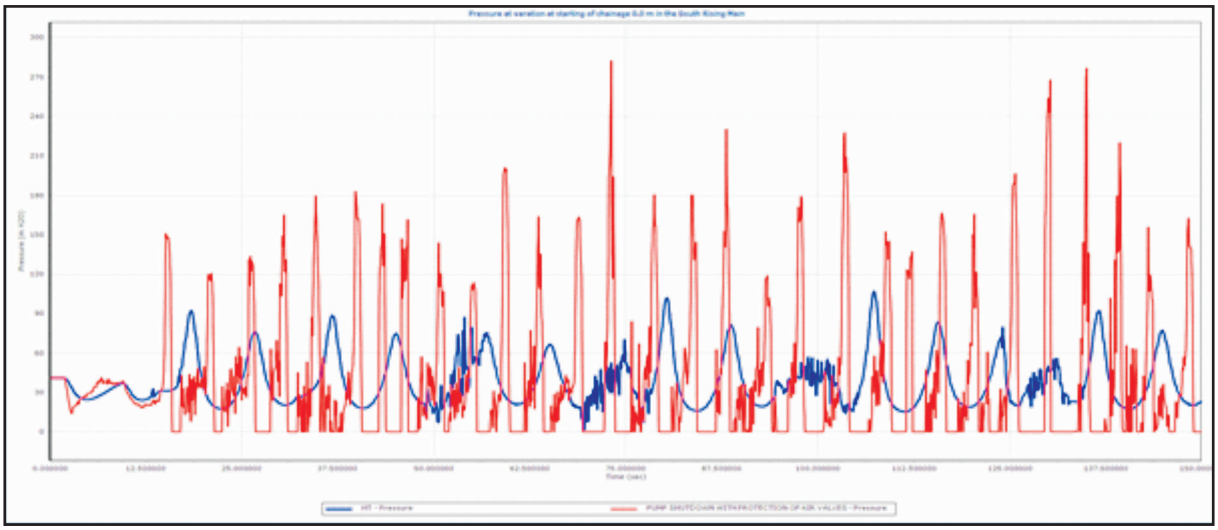
- Option 1: A compressed air vessel with a capacity of 1.5 m^3, paired with five double-acting kinetic air valves of 100 mm in size along the south side rising main.
- A compressed air vessel with a capacity of 3.0 m^3, paired with seven double-acting kinetic air valves of 150 mm in size along the north side rising main.
- Option 2: A bladder-type surge vessel with a capacity of 1.2 m^3, paired with five double-acting kinetic air valves of 100 mm in size along the south side rising main.
- A bladder-type surge vessel with a capacity of 2.5 m^3, paired with seven double-acting kinetic air valves of 150 mm in size along the north side rising main.

Impact & Achievements

- Surge protection studies in lift irrigation projects are pivotal in elevating the overall effectiveness, safety, and sustainability of agricultural water management systems.
- By investing these protective measures, stakeholders can significantly improve both economic and environmental outcomes.
- A well-designed surge protection system contributes to the long-term sustainability of irrigation practices, promoting enhanced agricultural productivity and effective water conservation.



Pressure variation at start of chainage of 0.0 m without and with protection of 1.5 m3 capacity compressed air vessel along the south side rising main



Pressure variation at start of chainage of 0.0 m without and with protection of 1.5 m3 capacity compressed air vessel along the south side rising main

Sr. No.	Technical Report Title	Technical Report No.
1	Additional hydraulic model studies for modified design and spillway with stilling basin as energy dissipater of Punatsanchhu-I H. E. project, Bhutan 1:70 G. S. 3D comprehensive model	6389
2	Computational fluid dynamics(CFD) analysis of downstream search gallery arrangements for water conductor system of Dulhasti Hydro-electric project (260 MW) stage-II, J&K	6391
3	Physical and numerical studies for the second revision of Modified Alternative-III design of the tunnel spillway of Pakal Dul H. E. project, J&K, 1:25 scale, 3D comprehensive model	6394
4	Hydraulic 3D comprehensive model studies for spillway & power intake of Ratle Hydroelectric Project, J&K	6408
5	Hydraulic 3D comprehensive model studies for assessment of scour downstream of spillway of Kiru H. E. project, Jammu & Kashmir	6415
6	Site visit for identifying the scope of hydraulic model studies for spillway nd energy dissipater of Lower Mullamari dam, Kalaburagi, Karnataka	6468
7	Hydraulic 2D model studies for modified spillway of Ratle H.E. Project, Jammu & Kashmir	6477
8	Computational fluid dynamics (CFD) analysis of upstream surge gallery arrangements for water conductor system of Kirthai-II (820 MW) hydroelectric project, J&K	6494
9	Hydraulic 2D model studies for right main canal head regulator of Polavaram Irrigation Project, Andhra Pradesh	6531

COASTAL AND OFFSHORE ENGINEERING

Divisions

- Ports and Harbours
- Mathematical Modeling for Coastal Engineering
- Coastal Hydraulic Structures
- Coastal Data Centre
- Coastal Field Instrumentation

Areas of Specialization/ Expertise

- Port layouts
- Shoreline Changes
- Dredging & Disposal
- Coastal Protection
- Breakwaters
- Safe Grade Elevation
- Ship Navigation
- Cooling Water Intake & Outfall
- Tidal Inlets
- Coastal Ecology

➢ **Desk and wave flume studies for**

- Design of coastal hydraulic structures
- Design of Coastal Protection Measures

➢ **Field investigation for**

- Coastal parameters for Hydraulic model studies

List of Clients

- Major Port Trusts
- WAPCOS
- Indian Navy
- Andaman and Lakshadweep Harbour Works (ALHW)
- ONGC
- State Maritime Boards
- State Fisheries Departments
- CIDCO
- Vizhinjam International Sea Port Limited
- NPCIL

Physical Model Studies for studying Wave Tranquillity Aspects inside Harbour Basin for Development of Eastern Breakwater and Jetty at Porbandar, Gujarat

Project Overview

The port at Porbandar situated on the West Coast of India in the state of Gujarat is owned and operated by Gujarat Maritime Board (GMB) with berthing facilities for vessels up to 50,000 DWT. The port is fully exposed to incident waves from the Arabian Sea, with maximum significant waves (Hs) of up to 4.0 m from the quadrant South to West at near-shore and is protected by a 2650 m long existing Western breakwater.Director General of Naval Projects (DGNP), Indian Navy intends to develop an exclusive berthing facility for their naval ships by constructing eastern breakwater of 2040 m in length on eastern side of the existing western breakwater for development of berthing facilities for Indian Navy.Hydraulic model studies for proposed development of Eastern breakwater and jetty from wave tranquility considerations using physical modeling techniques needs to be conducted.

Study Overview

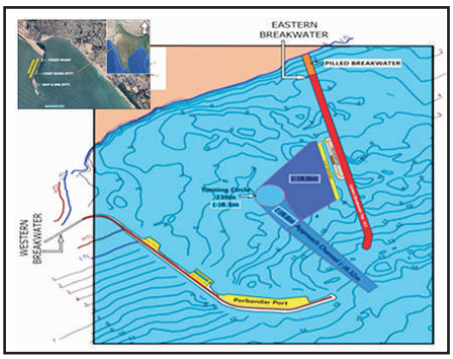
Physical wave model studies were carried outingeometrically similar rigid bed model of scale 1:120 along with a Random Sea Wave Generation (RSWG) along with multi-channel data acquisition system under SCADA control in a 75m x 60m Multi-Purpose Wave Basin Hangar. Two 21m long mechanical wave board units have generatedincidentrandom waves from the SW (Hs 3.5m, Tp 10 sec) and WSW (Hs 4.0m, Tp 10 sec) directions using servo-hydraulic system of 75HP capacity and wave height were measurements by capacitance type wave sensors.Various configurations of extension in proposed eastern breakwater with or without spur were studied to achieve the prescribed wave tranquillity limit of 0.80 m at the berth.

Key Insights & Findings

- From wave tranquilityconsiderations, providing a 350 m long spur normal to eastern breakwater at a distance of 150 m from seaward tip of the jetty happens to be most promising solution. Moreover, the proposal of 350 m spur would create additional berthing face on its lee-side for any possible future utility.
- The introduction of the spur, length of eastern breakwater could be optimized by removing 350 m portion beyond the spur in deeper depths.
- The provision of 350 m spur is not expected to cause any adverse effect on ship manoeuvrability and any additional financial burden as overall construction cost of eastern breakwater would get reduced.

Impact & Achievements

- The physical hydraulic model studies facilitate to study the various configuration of extension in proposed eastern breakwater with or without spur to achieve the desired wave tranquillity limit of 0.80 m at the berth without causing adverse effects on safe manoeuvring of ships.



Proposed Layout of Eastern Breakwater at Port at Porbandar

Physical Model Studies for Wave Tranquility at Port at Porbandar

Mathematical Model Studies for Wave Hindcasting and Storm Surge Analysis for Proposed Modernization and Expansion of Port Infrastructure at Vasco Bay, Mormugao Port, Goa

Project Overview

Mormugao Port located at the mouth of the Zuari River in Goa is planning modernization andexpansion of its port infrastructure at Vasco Bay. The proposed developments include a fishing harbour, passenger jetty, coastal cargo berth and berths for the Indian Navy and Coast Guard. The port being on the open coast the wave disturbance during the cyclonic storm events plays crucial role in the design of port infrastructure.The study aims to establish reliable design wave conditions for reclamation and berth construction works, while also assessing the impacts of extreme storm events in and around Vasco Bay.

Study Overview

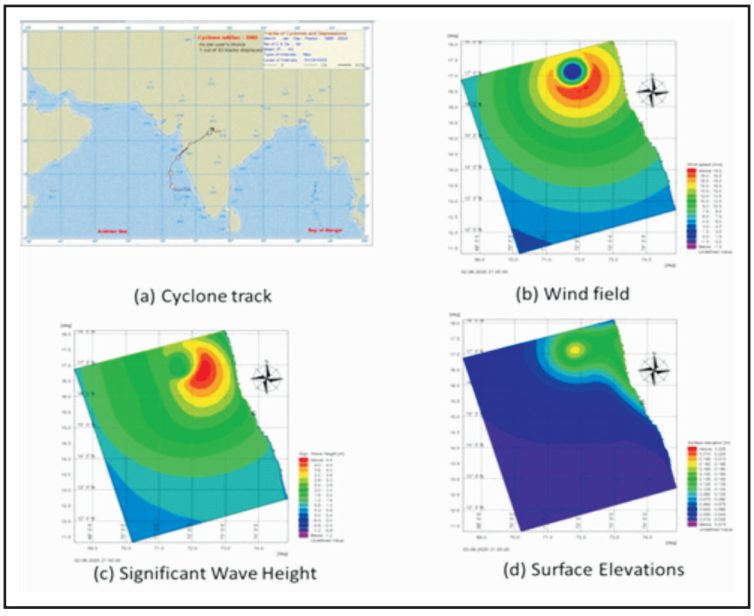
The mathematical models MIKE 21 SW & HD were used for carrying out wave hindcasting and storm surge analysis for historical storm events within a 500 km radius of the study area to evaluate wave dynamics and surge characteristics for the proposed port developments at Vasco Bay. Study results provide the essential hydraulic design parameters for the safe and efficient development of Vasco Bay.

Key Insights & Findings

- The wave hindcasting reveals that 100-year return period significant storm waves will be 1.09 m, 5.16 m, and 7.25 m are expected at depths of (-)5 m, (-)7 m, and (-)10 m respectively.
- The storm surge analysis reveal that the predicted 100-year return period storm surge will be 1.74 m while 100-year return period water level will be 5.18 m.

Impact & Achievements

- The study established reliable 100-year design wave, storm surge and extreme water level conditions for the proposed expansion and modernization works at Vasco Bay using MIKE 21 SW/HD mathematical modelling and extreme value analysis.
- The findings provide critical inputs for the safe and sustainable design of reclamation works, Passenger Jetty, Coastal Cargo Berth, Fishing Harbour, Indian Navy and Coast Guard berths, thereby supporting future growth of port and maritime infrastructure development.



Assessments of cyclone near the coast of Vasco Bay in June 2020

The development of international container transhipment port at Galathea Bay, A&N Islands

Project Overview

The development of an International Container Transhipment Port (ICTP) at Galathea Bay in Great Nicobar Island is proposed by Syama Prasad Mookerjee Port, Kolkata (SMPK) to strengthen global trade connectivity and improve cargo transhipment efficiency. The region is influenced by strong currents and monsoonal winds creating higher waves which causes movement of sediments which may result in siltation in harbour area of proposed port. Further the region is influenced by cyclonic disturbances causing higher waves and storm surges. The feasibility of the proposed ICTP development needs to be assessed from wave tranquility, storm surge, tidal hydrodynamics and siltation aspects.

Study Overview

The mathematical models MIKE 21 SW & BW are used to assess wave tranquility in the proposed harbour area created by considering eastern (2,442 m) and western (720 m) breakwaters. Storm wave hindcasting and storm surge estimation is carried out using the MIKE 21 FM spectral model based on historical cyclone wind and pressure data to simulate extreme wave conditions while, tidal hydrodynamic and sedimentation studies were carried out using MIKE 21 HD - MT models to assess flow conditions inside the harbour and estimate likely sedimentation in the harbour and Galathea Bay.

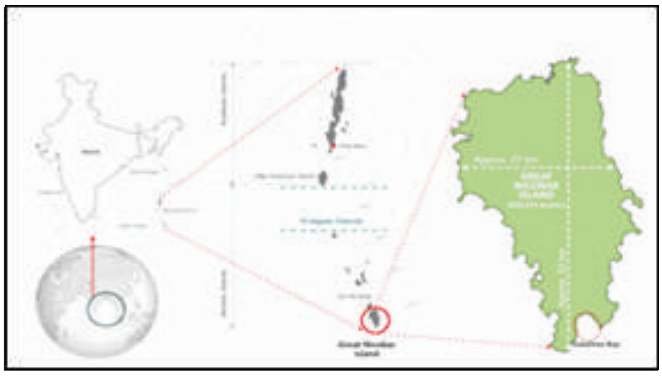
Key Insights & Findings

Existing wave heights (1.5-2.5 m) necessitate east and west breakwaters for harbour tranquillity and consideration of 2442 m (east) and 720 m (west) breakwaters provides acceptable wave conditions at berths and turning circle across all phases.

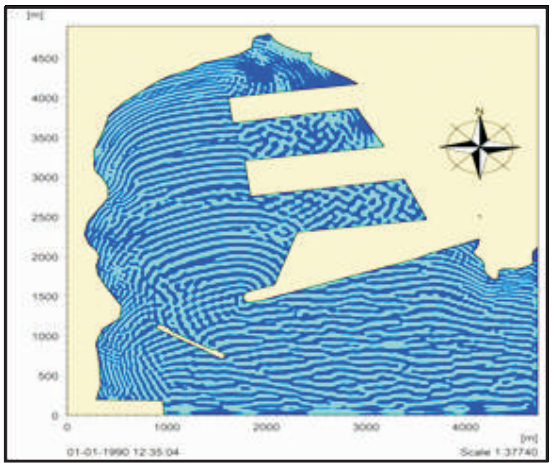
- The 100-year storm wave heights determined by storm hindcast studies will be 2.11 m at -5 m depth and 3.05 m at -24 m while 100-year storm surge will be 0.55 m. The 100-year design water level for the proposed structures is determined as 3.19 m.
- The hydrodynamic and siltation studies reveal that for proposed ICTP layout, peak tidal current in bay area are less than 0.1 m/sec with eddies / weak circulatory currents observed in front of CT-3 reclamation and near turning circle which may increase the sedimentation in the area and annual likely sedimentation in harbour area is estimated as 0.8 Mcum.

Impact & Achievements

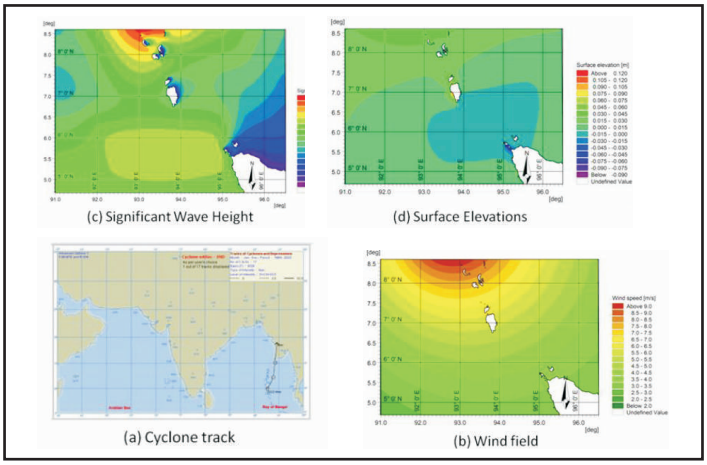
- The wave transformation and tranquility studies provide the guidance for the necessity of the breakwaters to achieve the tranquil conditions inside the harbour area.
- The wave hindcasting and storm surge estimation provides the guidance about the design water levels and wave conditions to be considered for the design of proposed structures.
- The hydrodynamic and sediment studies provides the flow conditions at the proposed development and probable areas prone for the siltation. This provides guidance to the stakeholders to plan dredging operations for uninterrupted movement of vessels.



Location of Galathea BayMasterplan layout for ICTP at Galathea Bay



Wave Propagation plot for Waves Incident from 1800 N (SOUTH) Direction with Wave Height of 2.5 m



Assessment of cyclone near the coast of Galathea Bay in May 1997

The development of proposed LNG facility at Jawahar Dweep in Mumbai harbour in Thane Creek for MbPA

Project Overview

Mumbai Port Authority proposed to develop a LNG facility along with reclamation at Jawahar Dweep in Thane Creek in Mumbai harbour. The complex hydrodynamic conditions viz. strong tidal currents, locally generated waves, eddy formation around Jawahar Dweep complicates finalisation of berth alignments as well as impact of reclamation on existing berthing facilities. Additionally, heavy deposition necessitate accurate estimation of siltation.

Study Overview

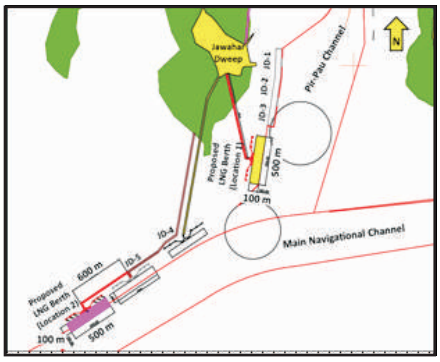
The studies were carried out using the Telemac Software Suite to evaluate the impact of proposed reclamation at Jawahar Dweep on local hydrodynamics along with feasibility of LNG berth. The tidal flow and sediment transport simulations were performed to assess impact of reclamation, suitability of berth location & alignment as well as estimation of siltation. Wave transformation studies were carried out using 25 years (1999-2024) of wave data to assess operability and downtime. Multiple scenarios were analysed to minimize effects on nearby facilities.

Key Insights & Findings

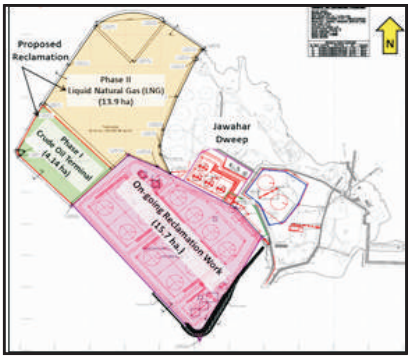
- Location for LNG berth near JD-3 is unsuitable due to adverse currents while, location near JD-5 is suitable with berth orientation (56°-236° N), showing aligned tidal flow and marginal siltation (~24,000 m^3/year).
- Wave conditions are favourable (Hs <0.5 m ~89%), with minimal downtime (~10 days/year for smaller and ~1 day/year for larger LNG carriers).
- The proposed reclamation with slight modifications suggested by CWPRS has negligible impact on existing hydrodynamics.

Impact & Achievements

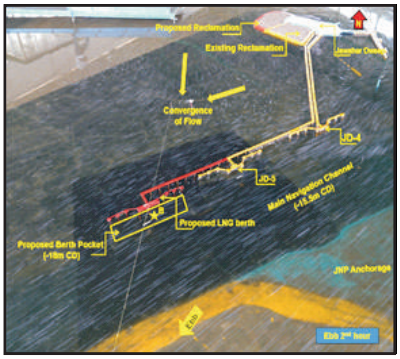
- The studies facilitate the optimal reclamation shape with minimal impact on the surrounding facilities as well as evolution of suitable location and alignment of LNG berth with minimal siltation for safe and economical operations.



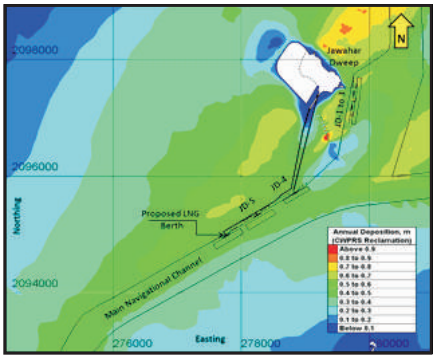
Location of Proposed LNG Berth



Proposed Reclamation at awahar Dweep



Flow Field at Proposed LNG Berth



Annual Siltation at Proposed LNG Berth

Mathematical Model Studies to assess Hydrodynamics, Sedimentation, Wave Tranquility and effect of Wave Disturbance on the Proposed Docks/Berths during Ship Navigation in the Channel for Proposed Master Plan 2047 for the Paradip Port, Odisha

Project Overview

Paradip Port Authority (PPA) proposed to carryout various harbour developments under Master Plan 2047. The port being on the open coast the wave disturbance along with tidal hydrodynamics and sedimentation plays crucial role in the finalisation of layout of development. The effect of ship generated waves may also create disturbance at the proposed development location. To assess the feasibility of the proposed harbour developments for the different layout options, mathematical model studies needs to be carried out for hydrodynamics, sedimentation, wave tranquillity and effect of wave disturbance during ship navigation.

Study Overview

The mathematical models MIKE 21 SW, BW, HD, ST, and LITPACK were used for wave transformation, wave tranquility, tidal hydrodynamics, sedimentation/siltation, littoral drift and shoreline change studies. Wave Hindcast simulations were carried out for 33 years (1990-2022) and further MIKE 21 BW is used to study the likely wave agitation inside the harbour to determine wave tranquility inside the harbour.

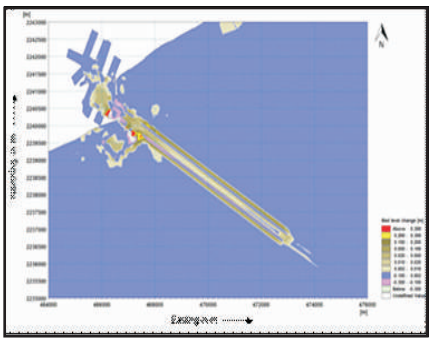
Key Insights & Findings

- The annual sedimentation and the capital dredging is the minimum in Proposal-1.
- Proposal-3 is found to be more suitable even though there is marginal increase in the annual sedimentation and the capital dredging in Proposal-3.
- The simulation of hydrodynamics and sedimentation reveals annual sedimentation with modified Proposal-3 in the Approach Channel, Port Area and Sand Trap is about 2.81 Mcum. The estimated volume of capital dredging is about 25.50 Mcum.

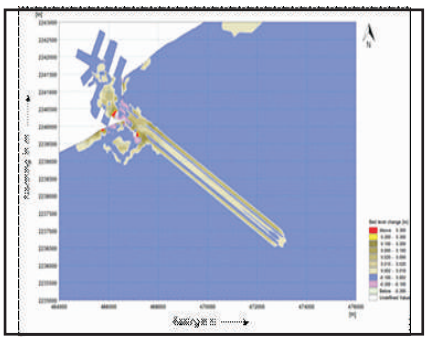
Impact & Achievements

- The investigations identified Proposal-3 as the most suitable harbour layout for safe Green Hydrogen/Ammonia terminal operations, ensuring acceptable wave conditions, optimized navigation safety and manageable dredging requirements.
- The study also established long-term sedimentation and shoreline evolution trends, which will support sustainable port expansion and future coastal management planning.
- Quantified annual maintenance dredging, capital dredging and littoral drift trapping requirements, enabling better planning of future maintenance and operational costs for Paradip Port

Location of Paradip Port



Sedimentation pattern in Proposal-3 during Non-monsoon season



Sedimentation pattern in Proposal-3 during monsoon season

Field Data Collection and Mathematical Model Studies for Hydrodynamics and Sedimentation for the Proposed Development at Tambaldeg, Sindhudurg, Maharashtra

Project Overview

Tambaldeg creek (Latitude 16°16'39.15"N and Longitude 73°24'42.00"E) in Sindhudurg district faces a problem of high sediment inflow which results in higher siltation at the mouth of the creek and hinders the navigation of vessels in and out of the creek. Maharashtra Maritime Board (MMB) has proposal to preserve the navigability at strategic location in Tambaldeg creek.

Study Overview

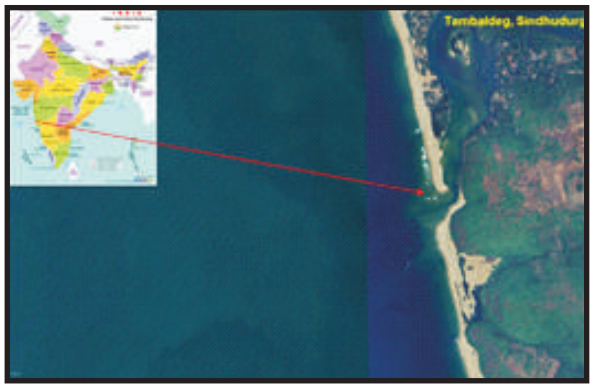
The comprehensive studies combining field data collection and mathematical modelling, utilizing MIKE 21 HD FM for hydrodynamics and MIKE 21 ST for sediment transport analysis and MIKE LITPACK module for littoral transport study were carried out. Field data collection was carried out using Marine ADCP, River ADCP, Tide Gauge and Current Meter were deployed at the desired locations for measurement of current speed, current direction and discharge.

Key Insights & Findings

- The LITPACK studies revealed that the net littoral drift is towards North (positive values) with a maximum of 0.13x106 Mcum/year.
- The deposition at the South side of South groyne is seen over the length of about 800 m, while erosion in the shoreline towards north side of northern groyne persists throughout the length of the coastline considered for the study.
- The arrangement of two parallel groynes viz. 450 m North and 350 m South proves to be optimal siltation mitigation measure

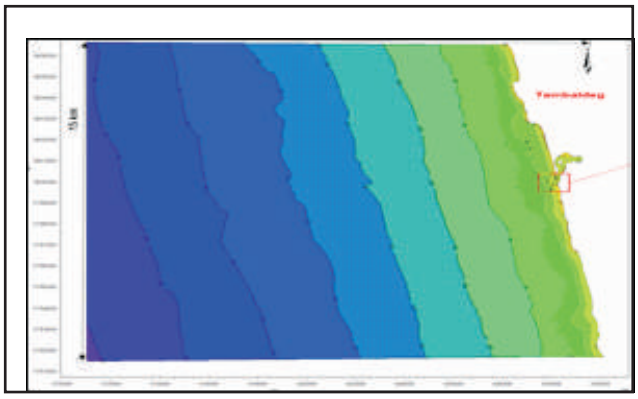
Impact & Achievements

- The proposed layout showed reduced sedimentation near the mouth with deposition ranging from 0.04 m to 0.10 m and will provide a long-term solution to preserve navigability at the Tambaldeg site.

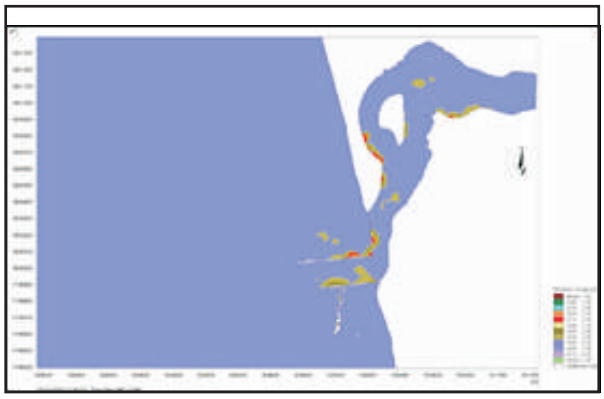


Location of Study Site at Tambaldeg

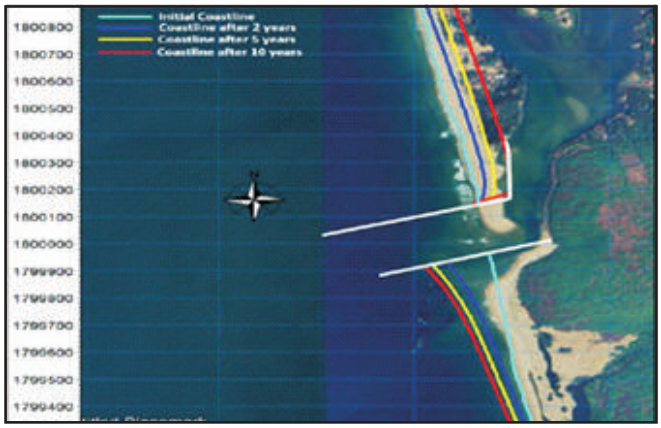
Marine ADCP deployed at site location



Computational Model Domain



Sedimentation pattern



Coastline Evolution at Tambaldeg

Desk and Wave Flume Studies for the Design of Breakwaters for the Proposed Development of Fishery Harbour at Versova, Mumbai, Maharashtra

Project Overview

Maharashtra Fisheries Development Corporation Ltd (MFDC), Department of Fisheries, Government of Maharashtra has proposal to develop a fishery harbour at Versova, Mumbai. The site being on open coast the fishermen are anchoring their fishing boats in open sea and are also facing difficulty in navigating the vessels due shallow depths and direct attack of assail waves. The fishermen community engaged in fishing activity all throughout the year. To create shelter area and protection from waves for the harbour, a breakwater is essential and the studies are necessary to design the same.

Study Overview

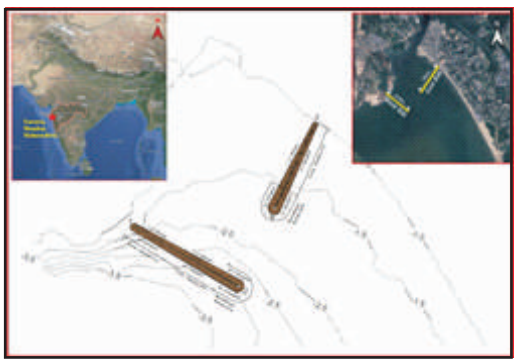
The desk and wave flume studiesto design breakwaters for the proposed development of fisheries harbour at Versova, Mumbai. A Design Water Level (DWL) of +6.15 m was considered including storm surge of 1.80 m and sea level rise of 0.20 m above the Mean High Water Spring (MHWS) of +4.15 m for the design purpose. The significant wave height (Hs) of 4.0 m & equivalent regular wave height (H1/10 = 1.27 Hs) of 5.10 m at +6.15 m (DWL) was considered for the design of breakwaters.

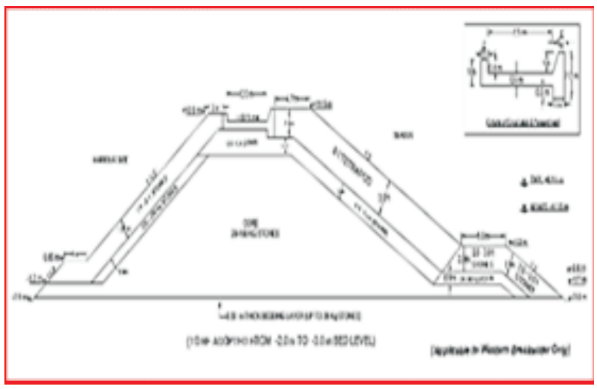
Key Insights & Findings

- The model test for the design of breakwaters at -3 m and -2 m bed level was carried out in a wave flume by reproducing the section to a Geometrically Similar (GS) scale of 1:35 & 1:27 respectively.
- The cross sections for the trunk portion of Western breakwater have been evolved at -2.0m and -3.0 m bed level with 4t and 8t (Fig. 2a & 3a) tetrapods in the armour layer respectively. The roundhead consists of 10 t tetrapods placed at -3.0 m bed level.
- Similarly, the cross sections for the trunk portion of Eastern breakwater have been evolved at -2.0 m bed level with 4t tetrapods in the armour layer (Fig. 2b & 3b). The roundhead consists of 8t tetrapods placed at -2.0 m bed level.

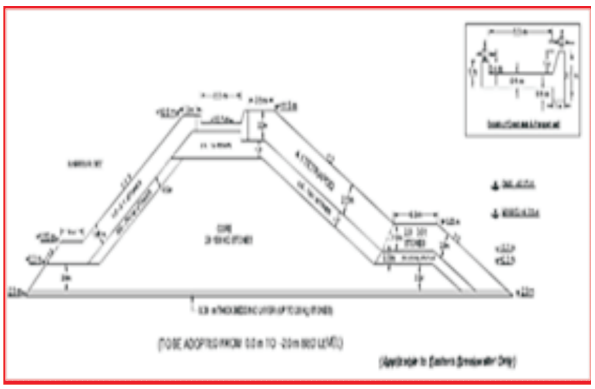
Impact & Achievements

- The cross-section of the breakwaters at -3.0 m and -2.0 m bed level were tested in wave flume and are found to be hydraulically stable against various wave conditions.
- Development of fishery harbour facility to cater to the needs of fishermen community at Versova.



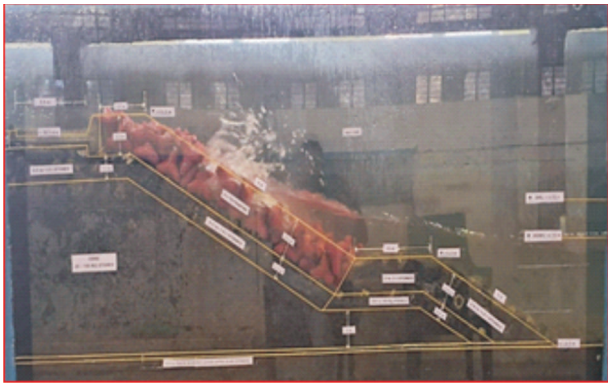


Design Cross-section of Western breakwater at -3.0 m



Design Cross-section of Eastern breakwater at -2 m bed level

Wave flume studies at -3.0 m bed level, 8 t tetrapods in armour layer under an action of 4.0 m wave height (T= 10 sec), DWL of +6.15 m.



Wave flume studies at-2.0 m bed level, 4 t tetrapods in armour layer under an action of wave height (H10) of 5.10 m, DWL of 6.15 m.

Sr. No.	Technical Report Title	Technical Report No.
1	Wave tranquility studies on upgraded comprehensive physical model of Chennai Port	6384
2	Desk studies for the strengthening of existing seawall between Lotus Jetty to Chhota Haji Ali/Baroda Palace, Mumbai	6393
3	Desk studies for the design of coastal protection measure for fisherman colony near Shivshastri Nagar at cuff parade, Colaba, Mumbai, Maharashtra.	6399
4	Mathematical model studies for wave tranquility and shoreline changes for Gopalpur alternate fishing harbor at Arjipalli, Odisha	6401
5	Mathematical model studies for hydrodynamics and optimization of dredged disposal location for proposed port at Machillipatnam, Krishna District, Andhra Pradesh.	6402
6	Mathematical model studies for alignment of ROPAX jetty and siltation in the proposed navigational channel for passenger water transport terminal at Nerul, Navi Mumbai for Mumbai port	6407

Sr. No.	Technical Report Title	Technical Report No.
7	Physical model studies for studying wave tranquility aspects inside harbour basin for development of eastern breakwater and jetty at Porbandar, Gujarat	6409
8	Desk studies for the design of coastal protection work at villages Umarasadi Macchivaad and Kolak, Tal. Pardi, Dist. Valsad, Gujarat	6411
9	Desk studies for design of coastal protection works at Haji Ali Dargah, Worli and Geetanagar, Mumbai	6412
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12	Desk and Wave flume studies for the design cross section of breakwater extension of western breakwater (250m) for the development of fishing harbor at Vizhingam, Kerala	6429
13	Mathematical model studies for wave transformation and shoreline changes for Karaikal Port, Puducherry	6439
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15	Mathematical model studies to assess hydrodynamics and sedimentation, wave tranquility and effect of wave disturbance on the proposed docks/berths during ship navigation in the channel for proposed master plan 2047 for the Paradip Port, Odisha	6441
16	Desk Studies for the design of coastal protection works in village Saiyad Rajpara, Taluka Una, District Gir Somnath, Gujarat	6442
17	Mathematical model studies for assessment of nearshore climate and shoreline changes at Vasco Bay, Mormugao Port, Goa	6443
18	Mathematical model studies for tidal hydrodynamics & siltation for the development of proposed reclamation & LNG berth at Jawahar Dweep in Mumbai Harbour	6446
19	Mathematical model studies for hydrodynamics and sedimentation for development of Fishing Harbour, Passenger Jetty, Coastal Cargo Berth and Berths for Indian Navy and Indian Coast Guard at Vasco Bay	6447
20	Mathematical model studies for hydrodynamics and sedimentation for bank erosion protection measures for ONGC pipeline in Godavari River, Near Kakinada, Andhra Pradesh	6449

Sr. No.	Technical Report Title	Technical Report No.
21	Mathematical model studies for wave hindcasting and storm surge analysis for proposed modernization and expansion of port infrastructure at Vasco Bay, Mormugao Port, Goa	6450
22	Mathematical model studies for wave tranquility for proposed development of international container transshipment port at Galathea Bay, Great Nicobar	6451
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32	Field data collection and mathematical model studies for hydrodynamics and sedimentation for the proposed development at Tambaldeg, Sindhudurg, Maharashtra.	6480
33	Physical hydraulic model studies to assess the tidal hydrodynamics conditions for alignment of proposed LNG berth and the shape of reclamation at JawaharDweep in Mumbai harbour	6481

Sr. No.	Technical Report Title	Technical Report No.
34	Mathematical model studies for proposed refurbishment of oil berth (berth no 09) to handle the vessels upto 200000 DWT at New Mangalore port, Mangalore, Karnataka	6482
35	Desk studies for the design of coastal protection works at Aksa beach, Madh, Mumbai	6483
36	Physical hydraulic model studies for the development of RO-RO jetty at Mora, Mumbai for Maharashtra Maritime Board	6484
37	Mathematical model studies for wave tranquility and shoreline changes for the development of fishing harbor at Kulai, Karnataka	6485
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39	Desk studies for the design of coastal protection works near Gayatri temple and lighthouse to air force station Dwarka, Devbhumi Dwarka, Gujarat	6493
40	Desk and wave flume studies for the design of groynes at Tambaldeg, Taluka. Devgad, Dist. Sindhudurg, Maharashtra	6495
41	Mathematical model studies for determining an alternate optimal location for dredged disposal for the Angre port at Ratnagiri, Maharashtra	6518
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43	Mathematical model studies for shoreline changes along the Palghar coastline in Maharashtra	6520
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45	Mathematical model studies for hydrodynamics and siltation for outer harbor work of project Varsha	6523
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49	Desk studies for the design of coastal protection works at coast guard, District HQ No. 03, Panambur, Manglore, Karnataka	6535
50	Desk and wave flume studies for the design of breakwater for proposed development fisheries harbour at Versova, Andheri, Mumbai, Maharashtra	6536

Sr. No.	Technical Report Title	Technical Report No.
51	Mathematical model studies for wave transformation and assessment of wave tranquility for proposed development of all weathermulti purpose greenfield deep- water port at Murbe, Maharashtra	6537
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FOUNDATION AND STRUCTURES

Divisions

- Geotechnical Engineering
- Structural Modelling Analysis
- Concrete Technology

Areas of Specialization/ Expertise

- Analysis and Interpretation of instrument data of concrete gravity dam and powerhouse
- 2D & 3D stability and stress analysis of Gravity dam by FEM
- Measurement of strains on Penstock bifurcation, manifolds, penstock ferrules, water pipeline ferrules etc.
- Assessment of suitability of materials for rehabilitation of distressed hydraulic structures
- Temperature control studies for mass concrete gravity dams
- Stability of slopes and settlement analysis

List of Clients

- State Government Authorities
- Polavaram Irrigation Project Head Works, Andhra Pradesh
- Sardar Sarovar Narmada Nigam Limited, Gujrat
- Satluj Jal Vidyut Nigam Limited, Himachal Pradesh
- Karnataka Neeravari Nigam Limited, Karnataka
- Indian Railways

Geotechnical Investigations in Soil and Rock Foundation Strata of Sundilla Barrage of Kaleshwaram Lift Irrigation Project, Telangana

Project Overview

Sundilla barrage, also known as Parvathi barrage is a part of the Kaleshwaram Lift Irrigation Project (KLIP) which is a multi-purpose irrigation project on Godavari River in Telangana state. The barrage was observed to have significant seepages on the downstream side.As per the National Dam Safety Authority's (NDSA) interim recommendations; geotechnical laboratory investigations were carried out by CWPRS on soil and rock samples extracted from boreholes drilled in four bays i.e. Bay Nos. 33, 46, 50 and 52 at Sundilla barrage of the Kaleshwaram project.

Study Overview

Various laboratory tests such as Moisture content, Grain size analysis, Specific gravity and Shear strength were conducted on soil samples; while tests viz. Moisture content, Density, Uniaxial Confined Strength (UCS) and Point load strength index were conducted on rock samples. The laboratory tests were conducted as per relevant IS Codes and standard procedures in literature.

Key Insights and Findings

- Laboratory tests revealed that the moisture content of soil samples was highly varying within range of 0.18% to 40.27%.
- Wet sieving indicated more than 50% fines in 9 samples, out of 22 tested.
- The specific gravity of soil samples was found to be in the range of 2.311 to 2.664.
- Direct shear tests indicated that the cohesion value ranged from 0.0 to 0.687 kg/sq.cm.The samples were mostly of cohesionless nature, with friction angle ranging from 21.85° to 44.98°.
- Laboratory tests on rock samples indicated that the rock strata washighly weathered, porous and weak.
- Rock samples exhibited low mechanical strength, with a wide range of Unconfined Compressive Strength (UCS) values, ranging from 4.06 MPa to 14.60 MPa.
- Extremely low Point Load Strength Index (PLSI) values were found, ranging from 0.02 MPa to 0.09 MPa.
- The rock samples showed an average density of 1675.56 kg/m^3 and average Moisture content of 3.91%.

Impact & Significant Achievement

- The geotechnical investigations were helpful in understanding various characteristics of soil and rock strata in foundation of the Sundilla barrage, which can have significant implications on its seepage and structural stability aspects.
- From the investigations it was found that the soil strata is mostly sandy and fine grained in nature and the rock mass is highly weathered and porous which necessitates careful consideration in design and implementation of further remedial measures.

Core boxes of vent No. 46 of Sundilla barrage

Determination of in-situ permeability for recommending foundation seepage mitigation measures for Lower Dyanaganga dam, Dist. Buldhana, Maharashtra

Project Overview

The Lower Dyanaganga earthen dam, near Khamgaon in Buldhana district of Maharashtra across the Dyanaganga River, is a major irrigation project with gross storage capacity of 10.822 MCM irrigating over 1611 hectares of land. The dam has length of 4010 m and height of 21.24 m. Following concerns regarding seepage through the dam's foundation; CWPRS was requested to inspect the site and recommend remedial measures. In this connection, in-situ permeability tests were conductedunder supervision of CWPRS in 27 boreholes drilled in foundation strata of the dam to assess permeability characteristics of the underlying strata and suggest seepage mitigation measures.

Study Overview

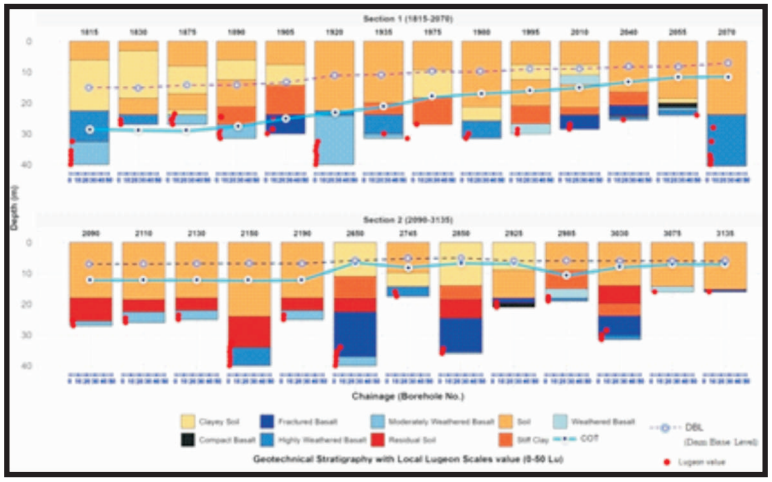
A comprehensive in-situ permeability assessment was conducted in 27 boreholes. Double packer permeability tests as per IS 5529:2006 (Part 2) were conducted in uncased rock sections by applying pressures up to 5.27 kg/cm^2 to measure water absorption rates and determine Lugeon values.

Key Insights and Findings

- Lugeon test results demonstrate spatial variation in permeability with values ranging from 0.96 to 55.31 Lu.
- High permeability zones (>50 Lu) were identified at one location (Ch. 1935 at 31.5 m depth with 55.31 Lu). Medium permeability zones (15-50 Lu) were identified at three locations i.e. Ch. 2055 (49.47 Lu at 24.0 m), Ch. 1935 (25.56 Lu at 30.0 m) and Ch. 2040 (18.26 Lu at 25.5 m). Moderate permeability zones (5-15 Lu) were identified at 19 test locations distributed across multiple chainages in moderately weathered fractured basalt and soil layers.
- Low permeability zones (<5 Lu) comprise the majority of 49 test locations (66.7% of total results). Very low permeability category is identified at only one test location i.e. Ch. 1920 at 35.5 m depth.
- Permeability values exceeding 3 Lugeon (threshold as per IS 6066:1994) extend to approximately 40 m depth from the dam's Top Berm Level. High Lugeon values of the rock strata are identified as primary source of seepage through foundation of the dam.

Impact & Significant Achievement

- Comprehensive permeability mapping of foundation strata was conducted which enabled targeted seepage mitigation strategy.
- Critical high-permeability zones requiring grout curtain treatment for seepage mitigation from Ch. 1815 m to Ch. 3180 m were identified based on studies.
- Upstream grout curtain extending up to 40 m depth from dam Top Berm Level was recommended as primary defence against foundation seepage.
- Enhanced understanding of foundation geology and stratification patterns for future dam safety assessments.



Variation of Lugeon value with depth and borehole stratification

Geotechnical Stability of River Bank Erosion Protection Structure for ONGC Pipeline in Godavari River, Andhra Pradesh

Project Overview

As a part of developing the KG-DWN-98/2 Project on East Coast of India, ONGC has installed a 20 inch gas export pipeline of approximate length 31 km originating from offshore Central Process Platform (CPP) to onshore gas terminal at Mallavaram, Andhra Pradesh. The pipeline is laid through sea and passes through Gautami-Godavari River with Land Fall Point (LFP) at G. Moolapalem. Approximately 500 m length of right river bank near LFP was facing severe erosion. CWPRS conducted comprehensive hydraulic, hydrodynamic and geotechnical studies for recommending suitable bank protection measures to safeguard the gas pipeline.

Study Overview

Geotechnical studies were conducted to assess seepage and slope stability aspects for the bund, which was suggested as erosion protection measure; for four different hydraulic head conditions depending upon water level in the river considering flood discharge and tide levels. Seepage analysis by numerical modeling using software PLAXIS 2D for above water level conditions was conducted to establish phreatic line and pore pressure distribution in the bund. Slope stability analysis to determine Factor of Safety (FS) of slopes was further conducted by Bishop's limit equilibrium method of slip circle analysis by incorporating results of seepage analysis.

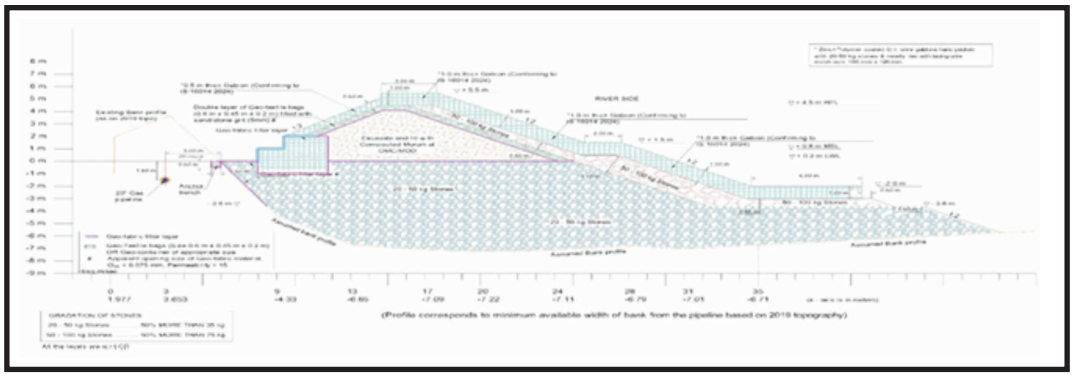
Key Insights and Findings

- An earthen bund of compacted murum covered by geofabric filter, geobags, armour layer of 50-100 kg stones and gabions was recommended as erosion protection structure

- Gabion toe wall was recommended at country side toe to ensure slope stability of the earthen bund.

Impact & Significant Achievement

- The minimum existing lateral distance between pipeline and the river bank was only about 1 m, which was originally about 19 m, indicating severe erosion at the site.
- With further erosion there was risk of exposing the pipeline.
- The studies helped to recommend a safe bank erosion protection structure designed for geotechnical safety criteria.



Recommended cross-section of erosion protection structure

Strain Measurement in Penstock During In-situ Hydro Test Under Static and Running Conditions for Bhira Hydroelectric Project, Raigad, Maharashtra

Project Overview

The Tata Hydro Electric Power Supply Company owns and operates the Bhira Pumped Storage Project which is located in Raigad district of Maharashtra by envisaging the waters from Mulshi Lake. In 1997, a parallel water conductor system and a power house in the vicinity of the old system have been constructed to generate additional power of 150 MW with a reversible Francis turbine unit which would function both in the generation and pumping modes. However, Tata Power had not been able to use it in pumped mode, due to some technical aspects. Recently, the technical aspects hindering usage of the plant in pumped mode have been sorted out and the Tata Power Company was interested to know the possibility of operating in pumping mode. In view of the above, they referred the field studies to CWPRS to evaluate the structural health safety of penstock pipe line under power generation and pump storage mode.

Study Overview

A hydro test was conducted for in-situ strain measurement to assess structural health condition of penstock line during trial run by simulating various operational stages of the power house including pumped mode along with other studies. Strain measurements in penstock were carried out by installing strain gauges at twopositions i.e. near Anchor Blocks AB3N & AB16N along penstock line & selecting four locations at each portion. All operational conditions such as filling, idle, power generation and pumping mode operation were simulated.

Key Insights and Findings

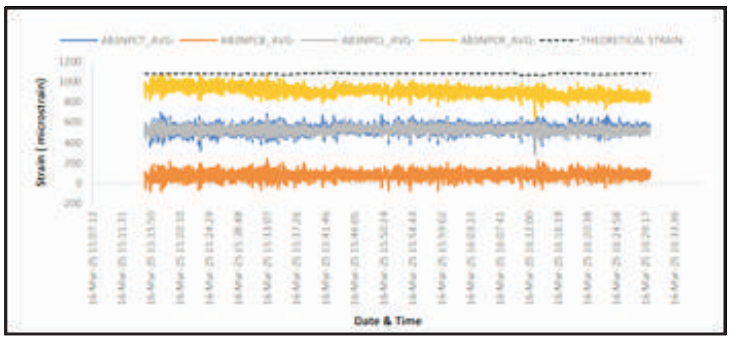
- These measured strains were compared with theoretical strains obtained for corresponding pressure and also compared with maximum permissible strain of the material ASTM -517 Grade F steel as per UTS & Yield stress criteria in lieu of BIS standards.
- Studies indicated that the overall measured strains in all operating conditions were within theoretical strain limits, wherever they are crossing theoretical strain limits still well within maximum permissible strain limit of 1265-1325 micro strain.

- In case of filled penstock after power generation and kept idle condition, strains along circumferential direction at AB3N location cross maximum permissible limits and in rosette direction at AB16N location crossing theoretical limits; which can be attributed to the pulsating momentum of water column in penstock.

Impact &Significant Achievement

- The design of penstock pipe line has been validated in both conditions i.e. power generation as well as pump storage mode.
- The studies will help the project authority to take critical decisions regardingenhancing the 150 MW power generation which was not functioning from last two decades.

Panoramic View of Penstock Lines



Strain variation during Pumping Mode at AB3 location

3D Stress Analysis by Fem of Penstock No.1 Bifurcation for Sunni Dam HEP, Himachal Pradesh

Project Overview

Sunni Dam Hydro Electric Project by SJVNL, a joint venture of the Government of India and the State Government of Himachal Pradesh is proposed on River Satluj by constructing a 95 m high concrete gravity dam. An underground power house is proposed on the right bank with installed capacity of 382 MW. Water from the dam will be conveyed through three penstock lines which bifurcate to feed six turbines. These penstock bifurcations having very complex geometry, comprise of various components. Structural analysis of such complex structures with conventional analytical approach is very much challenging and often results in very approximate estimation of stresses. The proposed penstock for Sunni H.E Project is designed by M/s AFRY India.

Study Overview

The Project Authority referred the studies to validate the design. Accordingly, 3D stress analysis by FEM of penstock bifurcation No.1 was carried out using ABAQUS software under different loading combinations. The analysis was carried out by creating two finite element models, one as normal model and another as extended model i.e. by extending the model up to 10 m, both before and after bifurcation. It was found that the proposed geometric features adopted in the design are structurally safe during various loading conditions such as individual application of external pressure of 0.793x106 N/m2 & Internal Pressure 0.950x106 N/m2, Combined application of both the pressures, Hydro test condition and Normal operation condition as the stresses and displacements remain within allowable limits.

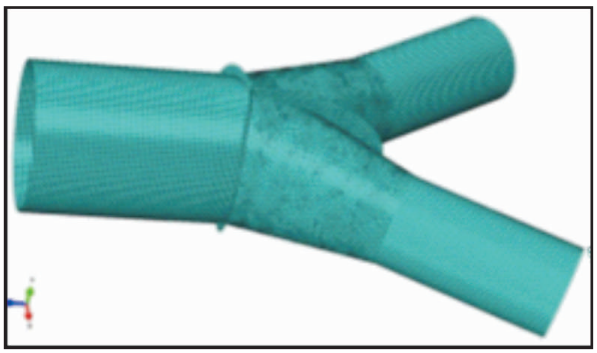
Key Insights & Findings

- The technical report is based on FEM analysis of penstock bifurcation which indicates that the stresses developed in various components of the structure are within the allowable limit.
- It also validates the design stress estimated by M/s AFRY India.

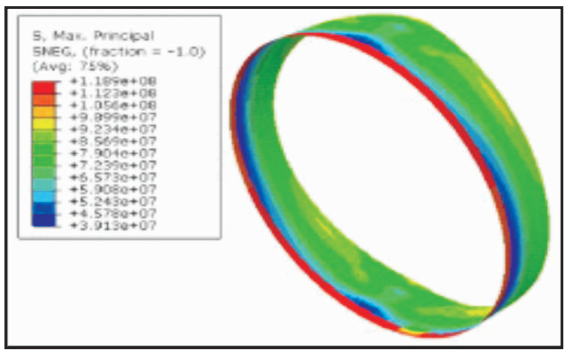
- It helps the Project Authority for further commissioning of works i.e. fabrication, erection and installation.

Impact & Achievements

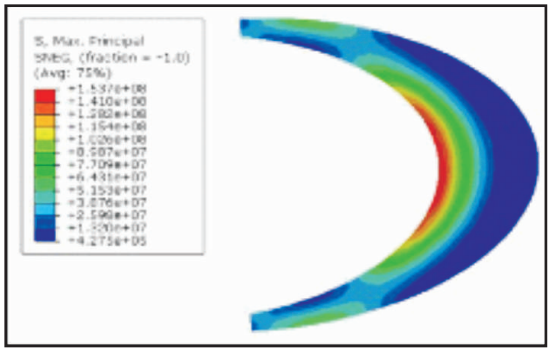
- The study brings out the importance of revalidation of design of penstock bifurcation which is a critical structure in power generation.



Typical meshing of bifurcation model



Distribution of Maximum Principal Stress (N/m2) in main pipe in extended model



Distribution of Maximum Principal Stress (N/m2) in sickle plate in extended model under load underload

Analysis and Interpretation of Dam Instrumentation Data for the period January 2023 to December 2024 for Spillway Block 4 of Polavaram Project, Andhra Pradesh

Project Overview

Polavaram Irrigation Project (P.I.P.) is under construction on Godavari River in West Godavari district of Andhra Pradesh. The Water Resources Department, Government of Andhra Pradesh is Executing Agency for the project on behalf of Government of India. This is a multipurpose project for irrigation, hydropower generation and to fulfil drinking water requirements of East and West Godavari, Vishakhapatnam and Krishna districts of Andhra Pradesh. The project will provide irrigation to 2.91 lakh hectares and hydropower with installed capacity of 960 MW apart from 23.44 TMC drinking and industrial water supply. Polavaram gravity dam having maximum height of 73.5 m and spillway length of 1128.40 m has been constructed using mass concrete with design mix consisting of M15 and M20 grade equivalent mixes. Selected blocks of the dam have been instrumented by installing vibrating wire type instruments to study its structural behaviour. Due to its massive footprint and national importance, the project authority is mandated to continuously monitor structural performance of the dam during and after construction.The Project Authorities further requested CWPRS, Pune to undertake studies for analysis and interpretation of the dam instrumentation data.

Study Overview

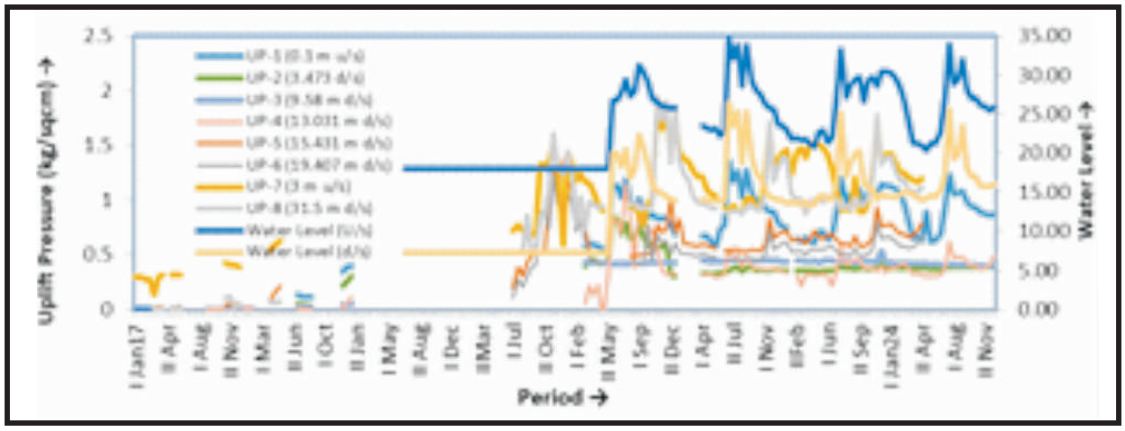
In order to monitor long term structural behaviour of the dam, frequency based vibrating wire type instruments have been installed during construction in three spillway blocks viz. 4, 26 & 40 to measure uplift pressure, pore pressure, stress, strain, temperature and displacements at different elevations and at varying distances from dam axis. Readings of these instruments are being recorded by the Project Authority fortnightly. The studies for analysis and interpretation of instrumentation data are awarded to CWPRS in May 2020. Accordingly, analysis and interpretation of the instrumentation is being carried out for three spillway blocks namely 4, 26 & 40.

- **Key Insights & Findings**
- Analysis and interpretation of dam instrumentation data of spillway block No. 4 is carried out up to December 2024.
- From analysis of the data it can be ascertained that, the uplift pressure and pore pressure appear to be following the seasonal water level variation pattern. Overall concrete mass temperature appears to be within the normal range and reciprocates the seasonal variation.
- The stresses calculated using measured strain are higher than the values given by stress meters but less than the allowable limits

Impact & Achievements

- The studies reflects present health condition of the dam which can be interpreted as good based on analysis of instrumentation data of block No. 4up to December 2024.

Panoramic view of Polavaram dam, Andhra Pradesh



Variation of uplift pressure with time

Design of Cementitious Shotcrete Mix by Laboratory Studies for Controlling Seepage through Upstream face of Dudhganga Dam, Maharashtra

Project Overview

Due to ageing, seepage and leaching of cementitious ingredients was observed in Dudhganga dam, Maharashtra. Also, damages in the form of cavities were observed. Therefore, after carrying out site visits by CWPRS officials and based on the results of borehole logging studies, DudhgangadamProject Authorities requested CWPRS, Pune to conduct laboratory studies for design of cementitious grout mix, suggest grout methodology and pattern to arrest seepage through the dam body.Further,Panel of Expert (PoE) Committee for the dam was constituted to accord approval and reviewgrouting and other repairs to the dam body. Based on the recommendations of PoE, the Project Authorities requested CWPRS, Pune to undertake this study.

Study Overview

The studies involved design of cementitious shotcrete material mix design for controlling seepage through upstream face of Dudhgangadam, Maharashtra by conducting laboratory tests. Project Authorities submitted shotcrete materials from two different suppliers along with samples of cement to carry out laboratory tests for cementitious shotcrete mix. Laboratory studies on the samples were carried out for designing the suitable cementitious shortcrete mix by varying the water/ cement (w/c) ratio and additives/ admixtures, fibres etc.; for achieving requisite impermeability, setting time, bond strength, tensile strength and other relevant parameters.CWPRS was also involved during trial application of shotcrete on upstream face of the dam, extraction of samples from treated surface and testing of samples in laboratory. Site visit was also conducted during critical stages of execution of shotcrete on upstream face of dam body.

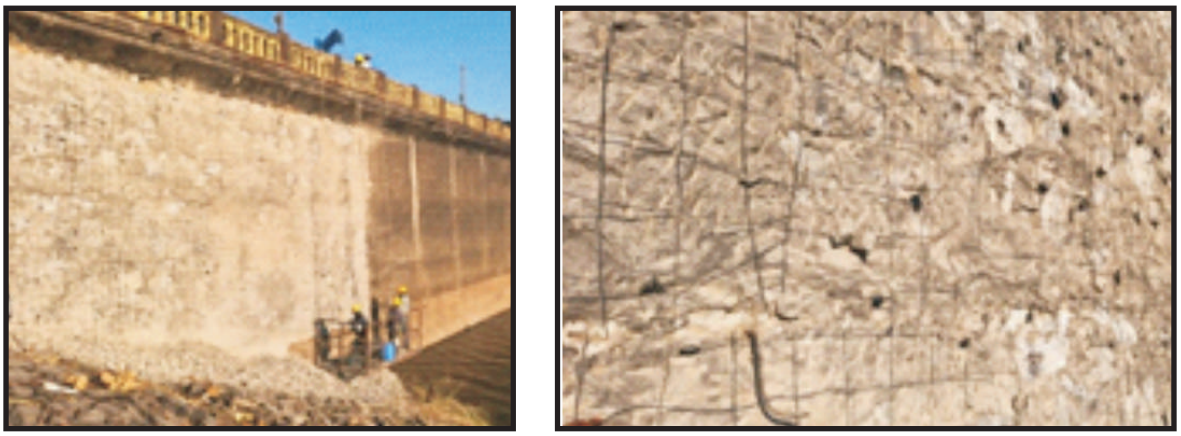
Key Insights & Findings

- After conducting extensive laboratory studies, suitable shotcrete mix design using two sets of admixtures was recommended for implementation at the dam site.
- It was also recommended that the final shotcrete mix design will be arrived at after carrying out further trials at site and after assessing its performance upon application on upstream surface of the dam.
- It was suggested to execute the shotcrete work at site by complying with IS 9012 - Code of Practice for Shotcreting, Project specifications and as per the approved drawings and instructions issued by PoE of Dudhganga project.

Impact & Achievements

- The studies helped in identifying suitable shotcrete mix for the dam, which will be significant in arresting leakages through the dam.

Arial view of the dam



Chipping of gunitting in progress & chipped portion of U/s surface

Sr. No.	Technical Report Title	Technical Report No.
1	Geotechnical studies for suggesting seepage mitigation and stability measures for Kalwande earthen dam, Dist. Ratnagiri, Maharashtra	6403
2	Site inspection of earthen dams of Relampadu and Muchonipally balancing reservoirs, Telangana	6404
3	Geotechnical studies for suggesting seepage mitigation and stability measures for Telewadi Earthen dam, dist. Ratnagiri, Maharashtra	6417
4	Determination of In-situ permeability for recommending seepage mitigation measures through foundation of Kadaknathwadi storage tauk district Dharashiv, Maharashtra	6420
5	Geotechnical Seepage and stability studies for Nive Dam Taluka Sangameshwar Ratnagiri, Maharashtra	6423
6	Laboratory studies towards cementitious grout material mix design for controlling seepage through Tillari dam, Kolhapur, Maharashtra	6431
7	Geotechnical stability of river bank erosion protection structure of ONGC pipeline in Godavari River, AP	6437
8	Analysis and Interpretation of Instrumentation Data of Power House for the period Jan 2023 to Dec 2024 Indira Sagar H. E. Project, M. P	6448
9	Laboratory studies for determination of strength and elastic properties on extracted cylindrical concrete core samples from distressed blocks of Sapan Medium Project, Amravati, Maharashtra	6457
10	Strain measurement in penstock during In-situ hydro test under static and running conditions for Bhira Hydroelectric Project, Raigad, Maharashtra	6458
11	Site inspection of earthen dam of Wagh Minor Irrigation Project, District Palghar, Maharashtra	6466
12	Analysis and Interpretation of dam instrumentation data for the period January 2023 to December 2024, Indira Sagar Dam, M.P.	6474

Sr. No.	Technical Report Title	Technical Report No.
13	Site visit for inspection, testing and health assessment of spillway gates, cranes and stop log elements & other hydro mechanical components of Narayanpur dam, Karnataka	6476
14	Geotechnical investigations in soil strata for Sundilla barrage of Kaleshwaram project, Telangana	6487
15	Evaluation of physical and mechanical properties of rock samples for Sundilla barrage of Kaleshwram project, Telangana	6488
16	Geotechnical seepage and stability for Sakharpa dam, Tal. Sangameshwar, Dist. Ratnagiri, Maharashtra	6496
17	3D stress analysis by FEM of penstock No. 01 bifurcation for Sunni dam HEP, Himachal Pradesh	6499
18	Analysis and interpretation of dam instrumentation data for the period January 2023 to December 2024 for spillway block 4, Polavaram project, Andhra Pradesh	6503
19	Geotechnical seepage and stability studies for Awashi earthen dam, Tal Dapoli, Dist. Ratnagiri, Maharashtra	6512
20	3D stress analysis of unsymmetrical bifurcation of penstock no. 03 using Finite Element method, Sunni dam HE project, Himachal Pradesh	6516
21	Determination of in-situ permeability for recommending seepage mitigation measures through foundation of Lower Dyanganga dam, Dist. Buldhana, Maharashtra	6517
22	Geotechnical seepage and stability studies for Panhale earthen dam, Tal. Lanja, Dist. Ratnagiri, Maharashtra	6521
23	Laboratory studies towards cementitious grout material mix design for controlling seepage through the body of Mahi dam, Dhar, Madhya Pradesh	6532
24	Design of cementitious shotcrete mix through laboratory studies for controlling seepage through the upstream face of Dudhganga dam, Maharashtra	6540
25	Analysis and interpretation of dam instrumentation data for the period January 2023 to December 2024 for the spillway block 40, Polavaram, Andhra Pradesh.	6541
26	Analysis and interpretation of dam instrumentation data for the period January 2023 to December 2024 for the spillway block 26, Polavaram, Andhra Pradesh.	6542

APPLIED EARTH SCIENCES

Divisions

- Engineering Seismology
- Vibration Technology
- Geophysics
- Isotope Hydrology

Areas of Specialization/ Expertise

- Site Selection & Installation of Instruments for setting up of Seismological Observatories
- Analysis & Interpretation of Instrument Data (MEQ) for Epicenter Location, Source Parameter & Magnitude Estimation etc.
- Analysis & Interpretation of Data for estimation of Strong Motion Parameters for Peak Ground Acceleration, Response Spectra, Acceleration Time History & Seismic Coefficients
- Estimation of Site-Specific Seismic Design Parameters
- Non-destructive tracer and bore hole geophysical logging techniques
- Delineation of seepage zones in hydraulic structures
- Determination of ground water characteristics
- Solutions to problems related to foundation of dam sites, structures of River valley, maritime and nuclear power projects
- **List of Clients**
- Govt of Karnataka
- NHDC
- Govt. of Maharashtra
- JKSPDC
- Govt of Mizoram
- WAPCOS
- NHPC
- Mazgaon Dock Ltd., Mumbai
- Govt. of Goa
- Central Water Commission
- NPCIL
- NWDA

Estimation of Site-specific Seismic Design Parameters for Tuichang Project, Mizoram

PROJECT OVERVIEW

The proposed Tuichang Hydroelectric Project (THEP) envisages construction of a 160 m high and 450 m long concrete dam across Tuichang River in Hnahthial district of Mizoram with 102 MW installed capacity to address the power failure issues of beneficiary areas. The proposed dam site lies in Seismic Zone - V as per the seismic zoning map of India [IS 1893 (Part 1): 2016].

STUDY OVERVIEW

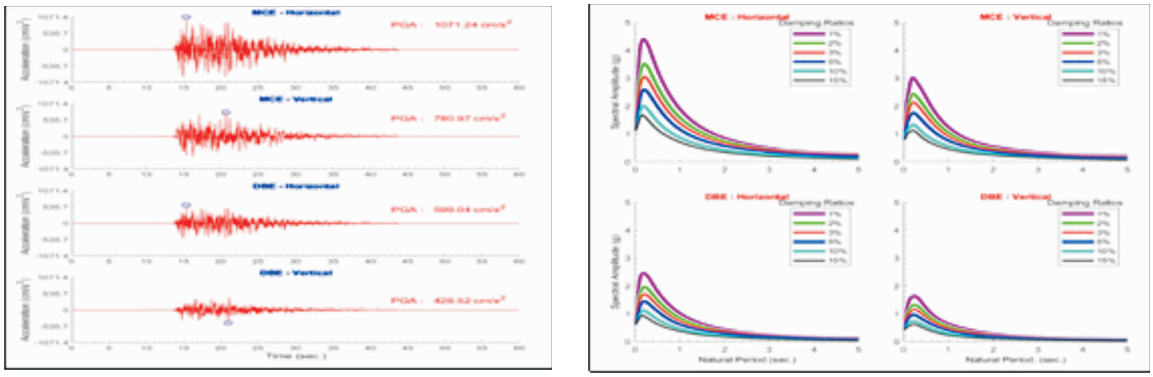
The site-specific seismic design parameters are estimated in the form of Design Accelerograms and Response Spectra for different damping ratios. Seismic Coefficients (using different criteria) of horizontal and vertical components of ground motion for structural design of the dam under earthquake load combinations are also estimated. The site-specific design earthquake parameters for the THEP dam are determined using a return period of 2475 years (2% PoE in 50 years) for Maximum Credible Earthquake conditions.

KEY INSIGHTS & FINDINGS

- The peak ground acceleration (PGA) values of horizontal and vertical components of motion at MCE level are found to be 1.093 g (1071.24 cm/s2) and 00.796 g (780.97 cm/s2) respectively. Similarly, the PGAs for horizontal and vertical components for DBE level of motion are found to be 0.611 g (599.04 cm/s2) and 0.437 g (428.52 cm/s2) respectively.
- The values of h and v calculated from site specific estimate have been found higher than the values computed using other approaches. Therefore, it was recommended that for preliminary design purpose, values of horizontal and vertical seismic coefficients should be considered as 0.38 and 0.25 respectively.

IMPACT & ACHIEVEMENTS

- The proposed hydroelectric project is located in the highest seismic Zone (V). The safety of this project against earthquake forces is a prime concern, as major earthquakes frequently occur in the North East region.
- This study will enable project authorities to design the project to withstand the maximum probable seismic forces, thereby ensuring safety of the proposed power project.



(A) Design response spectra with different damping ratios as computed from the MCE level of accelerograms for horizontal and vertical components of ground motion for THEP dam, Mizoram, (B) The MCE and DBE level of site-specific design accelerograms of horizontal and vertical components of motion

Qualitative Assessment by Non-destructive Testing of Foundation Structures Using Ultrasonic Pulse Velocity (upv) Methods at Ennore Sez Super Thermal Power Project (stpp), Thiruvallur, Chennai

Project Overview

The Ennore SEZ Super Thermal Power Project (STPP) is a 1.3 GW coal-based power station under construction at Katupalli near Ennore, Tamil Nadu. As it is an under-construction plant, the project authority desired to carry out qualitative assessment of various foundation structures at the site. In this connection, CWPRS conducted Non-Destructive Testing (NDT) at site to assess the overall quality, uniformity, and integrity of concrete in18 nos. of the foundation structures.

Study Overview

Ultrasonic Pulse Velocity (UPV) and Rebound Hammer test techniques were employed at designated grid locations of all the structures for evaluating in-situ quality of structural concrete in the foundation structures of Ennore SEZ STPP. During investigations, large number of observations related to the propagation velocity of elastic compressional waves through concrete were recorded for each of the 18 structures. The obtained test data were analysed to assess homogeneity, quality and integrity of concrete.

Key Insights & Findings

- UPV values obtained from majority of the test locations exceeded 4.0 km/s, indicating dense and well-compacted concrete with good integrity.
- Variations in UPV values at isolated locations were marginal and remained within acceptable limits, suggesting overall uniformity in concrete quality across the structures.
- No structural distress indicators such as major cracking, delamination or severely deteriorated concrete zones were inferred from the NDT results.

Impact & Achievements

- It was established from studies that the in-situ concrete quality of all investigated structures falls within good to excellent category, thereby enhancing confidence in structural integrity of the structures.
- Thus, long term durability, performance and safety of the critical foundation structures was ensured.

NDT studies in progress at site

Estimation of Safe Charge Weight Per Delay by Conducting Trial Blast Field Investigations for Excavation of Hard Rock During Construction of Proposed Lower Reservoir at Bhivpuri HEP, Maharashtra

Project Overview

Bhivpuri Hydropower Station, one of India's oldest hydropower plants (constructed during 1916-1922), presently has an installed capacity of 75 MW. To further enhance the generation capacity, Tata Power has proposed the 1000 MW Bhivpuri Pumped Storage Project (PSP) within the existing premises at Raigad, Maharashtra. The project, awarded to a joint venture of HCC and TPL, involves construction of a lower reservoir, a pit-type powerhouse, and an upper intake at Khandi. The study involves excavation of huge quantity of extremely hard rock strata which is spread over an area of 20 Ha by blasting operations. In this connection, based on the request from Tata Power Company Ltd., trial blast investigations have been carried out by CWPRS to optimize the blast design parameters.

STUDY OVERVIEW

Monitoring of blast induced ground vibration and air blast was carried out by deploying seismographs at several locations near the structures as well as bed rock.Following methodology was adopted for optimization of blast design parameters:

- 15-20 trial blasts were carried out by varying various blast design parameters.
- Site specific attenuation relation was developed by using the trail blast data.
- The equation was used to estimate safe charge weight per delay to be used at different distances from the blasting zone.
- Adoption of safe vibration level for ensuring safety of nearby structures.

Key Insights & Findings

- In most of the blasts, Peak Particle Velocity (PPV) level observed near residential structures was found to be less than 5 mm/s.
- Air over pressure level was found to be less than 133 dB which is considered to be safe for human beings.

Impact & Achievements

- Based on the trial blast studies carried out, blasting pattern to be used during actual excavation was optimized.
- The recommended blasting pattern will ensure safety of nearby structures and human beings.

ESTIMATION OF SHEAR WAVE VELOCITY (VS30) AT MAT SEKAWI HYDRO ELECTRIC PROJECT, MIZORAM

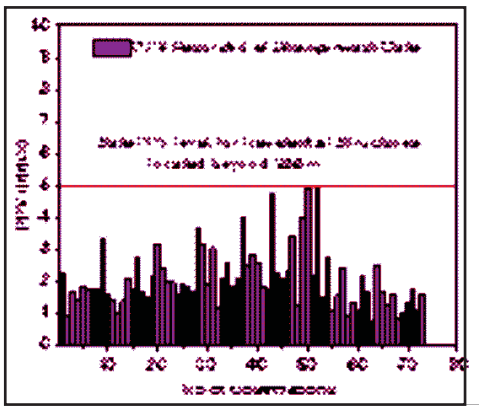
Project Overview

The Mat-Sekawi project is a proposed 120 MW hydroelectric power project in Mizoram, India. The project is conceptualized to construct a 148 m high and 1038 m long rockfill dam with central clay core, across river Met in Lunglei district of Mizoram being developed by NEEPCO (North Eastern Electric Power Corporation Limited). The project is expected to commence construction in 2027, with commercial operation in 2029. Purpose of the project is to contribute to Mizoram for electricity generation. The Mat-Sekawi project is one of several hydel projects being considered for development of the state.. The scope of study includes estimation of average shear wave velocity (Vs30) at different locations in the dam vicinity using Multi Channel Analysis of Surface Waves (MASW).

Study Overview

MASW survey was carried out by employing a 'state-of-the-art' 24-channel signal enhancement seismograph 'McSEIS' manufactured by M/s OYO Corporation, Japan. Advantage of the signal enhancement facility is that when impacts for generating seismic waves are repeated, subsequent signals are added together in the digital memory. The random background noise tends to cancel out while the desired signal grows progressively larger (signal enhancement). With this facility it is possible to record

Trial blasting at lower reservoir in progress



PPV level observed near residential structures

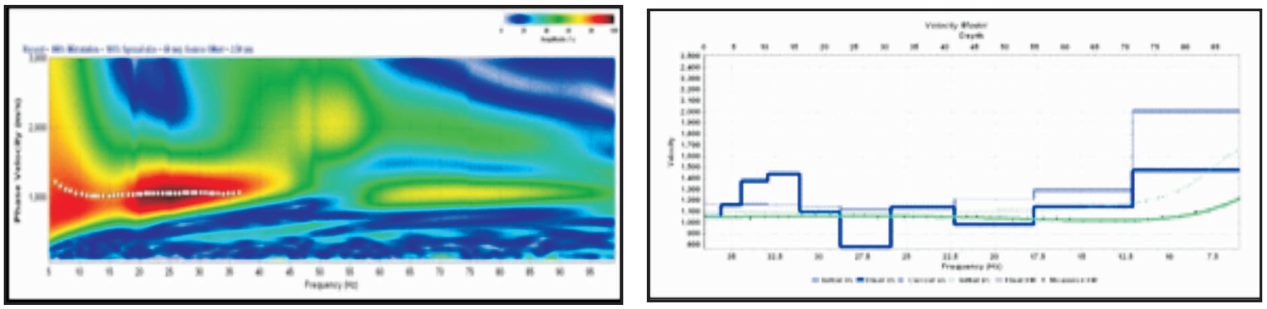
even weak wave arrivals. The equipment has very high resolution and can automatically store the recorded signals in digital memory allowing gain adjustment and filtering of data (if needed) after the data have been recorded. 10 kg Sledge hammer with metal plate is used for generation of seismic waves. Vertical geophones with 4.5 Hz natural frequency were used for picking up the seismic (elastic) waves.

Key Insights and Findings

- The average shear wave velocity computed from the nearest four sites (TS3, TS4, TS5 and TS6) yielded an average value of 798.608 m/s.
- Similarly, for the right bank, the Vs30 values computed from the nearest four sites (TS8, TS9, TS10 and TS11) produced an average velocity of 588.646 m/s.
- These Vs30 values from the left and right banks was then considered to arrive at a representative Vs30 value for the present study.
- The average value turns out to be 693.627 m/s. Therefore, a Vs30 value of 690 m/s was finalized as the representative Vs30 value and was adopted for subsequent analysis.

Impact & Significant Achievement

- The proposed dam site is located in seismic zone-V, which is seismically high active region of India.
- This study will provide valuable insights to the project authority for safe design of the proposed dam, ensuring its resilience against earthquakes.
- Once constructed, the project will enable power supply to Mizoram state to meet its increasing demand and reduce reliance on power purchased from outside states.



(A)1-D shear wave velocity (m/sec) model obtained for one of the shots gather, (B)Dispersion curve extracted from the dispersion image obtained for one of the shot gathers along profile

Estimation of Site-specific Seismic Design Parameters for Tuichang Project, Mizoram

PROJECT OVERVIEW

The proposed Tuichang Hydroelectric Project (THEP) envisages construction of a 160 m high and 450 m long concrete dam across Tuichang River in Hnahthial district of Mizoram with 102 MW installed capacity to address the power failure issues of beneficiary areas. The proposed dam site lies in Seismic Zone - V as per the seismic zoning map of India [IS 1893 (Part 1): 2016].

STUDY OVERVIEW

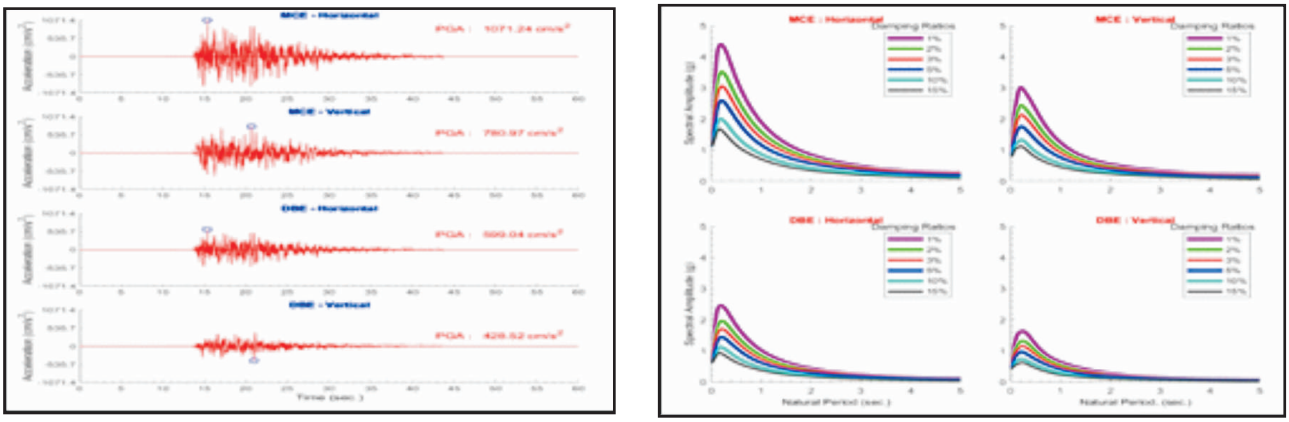
The site-specific seismic design parameters are estimated in the form of Design Accelerograms and Response Spectra for different damping ratios. Seismic Coefficients (using different criteria) of horizontal and vertical components of ground motion for structural design of the dam under earthquake load combinations are also estimated. The site-specific design earthquake parameters for the THEP dam are determined using a return period of 2475 years (2% PoE in 50 years) for Maximum Credible Earthquake conditions.

KEY INSIGHTS & FINDINGS

- The peak ground acceleration (PGA) values of horizontal and vertical components of motion at MCE level are found to be 1.093 g (1071.24 cm/s2) and 00.796 g (780.97 cm/s2) respectively. Similarly, the PGAs for horizontal and vertical components for DBE level of motion are found to be 0.611 g (599.04 cm/s2) and 0.437 g (428.52 cm/s2) respectively.
- The values of h and v calculated from site specific estimate have been found higher than the values computed using other approaches. Therefore, it was recommended that for preliminary design purpose, values of horizontal and vertical seismic coefficients should be considered as 0.38 and 0.25 respectively.

IMPACT & ACHIEVEMENTS

- The proposed hydroelectric project is located in the highest seismic Zone (V). The safety of this project against earthquake forces is a prime concern, as major earthquakes frequently occur in the North East region.
- This study will enable project authorities to design the project to withstand the maximum probable seismic forces, thereby ensuring safety of the proposed power project.



(A) Design response spectra with different damping ratios as computed from the MCE level of accelerograms for horizontal and vertical components of ground motion for THEP dam, Mizoram, (B) The MCE and DBE level of site-specific design accelerograms of horizontal and vertical components of motion

Parallel Seismic Test At Upstream and Downstream Secant Piles of Sundilla Barrage of Kaleswaram Lift Irrigation Project (KLIP), Telangana

Project Overview

The Kaleshwaram project in Telangana is a multi-purpose and multi-stage lift irrigation project, divided into 7 Links and 56 packages. The project comprises of three barrages, 14 reservoirs, 31 lifts and 1,832 km of canals, tunnels and pipelines. Construction of a barrage across river Godavari at Medigadda near Kaleshwaram, and two more barrages between Medigadda and Sripada Yellampally Project at Annaram&Sundilla has been done to convey water from Sripada Yellampally Project to the command area spread over in 13 districts of Telangana. In order to ascertain the reasons of seepage through foundation of Sundilla barrage, parallel seismic test was recommended by the National Dam Safety Authority (NDSA) Committee at upstream and downstream of Sundilla barrage.

Study Overview

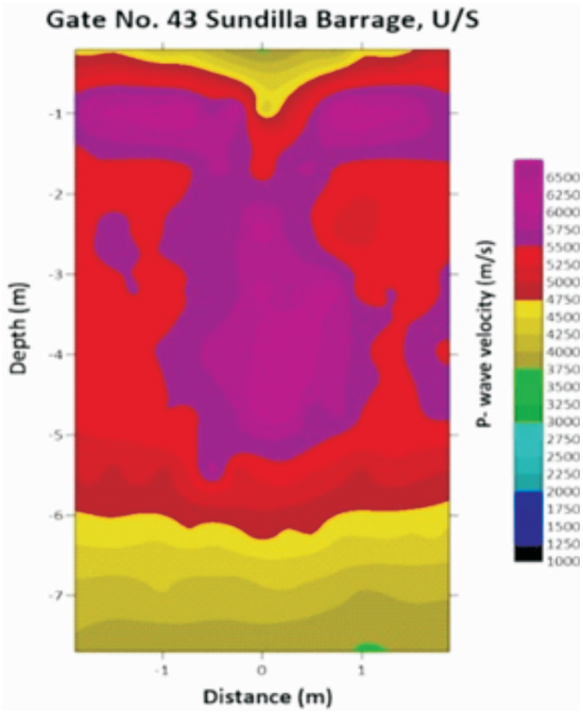
Parallel seismic test was conducted from bay Nos. 31 to 54 in upstream and downstream of Sundilla barrage as suggested by NDSA, to study the characteristics of secant pile and portion of raft covering cut off in the bays. From the seismic tests conducted, a total of 48 seismic sections were generated to get the velocity distribution. The velocity distribution was obtained in partial length and depth of secant piles due to limited depth of drilled holes and single hole drilled in the center of each bay on upstream and downstream cut offs. Compressional wave velocity distribution was plotted for bay Nos. 31-54 on upstream and downstream of the barrage. From the velocity distribution, it was observed that pulse velocity was varying in the range of 1000 m/s to 6500 m/s in most of the bays. Significant area in almost all bays depicts distribution of low velocity.

Key Insights and Findings:

- A maximum depth of upstream about 7.76 m and width of 4.60 m and downstream maximum depth of about 13.21 m and maximum width of about 5.91 m is achieved in the middle of the bay/vent from the test results on the upstream side and downstream.
- Anomalous low velocity signatures (< 3000 m/s) are observed in almost all bays in the raft and below the raft in secant pile cut off of upstream covering almost full plotted length of the bay.
- On the other hand, compressional wave velocities of greater than 3000 m/s are observed in the downstream side in most of the bays covering major area of the secant pile.

Impact &Significant Achievement:

- The parallel seismic test at upstream and downstream of Sundilla barrage provides the key findings to understand the integrity/continuity of secant pile.
- The results will give the information on present condition of the secant piles thereby project authority/National Dam Safety Authority (NDSA) can decide whether to store water in the barrage or not.
- These results will also give the information on strength of the secant piles from structural safety point of view.



Seismic Velocity Distribution of Secant Piles

Sr. No.	Technical Report Title	Technical Report No.
1	Parallel seismic at upstream and downstream secant piles of Sundilla barrage of Kaleshwaram Lift Irrigation Scheme (KLIS), Telangana	6400
2	Vibration Studies for Bhira, Hydroelectric Project, Raigad, Maharashtra	6410
3	Geophysical investigation for delineation of distressed zones in Kalwande dam, Maharashtra	6418
4	Geophysical investigations for delineation of distressed zones in Tangar Dam, Maharashtra	6425
5	Geophysical investigations for delineation of distressed zones in Nive Dam, Maharashtra	6428
6	Estimation of shear wave velocity (Vs30) at mat Sewaki HEP, Mizoram	6434
7	Geophysical investigations for delineation of distressed zones in Sakharpa Dam, Maharashtra	6435
8	Estimation of safe charge weight per delay by conducting trial blast field investigations for excavation of hard rock during construction of power house by blasting operations at Bivpuri HEP, Maharashtra	6436
9	Assessment of in-situ quality of concrete of conduit and distribution chamber by NDT methods for Berdewadi dam, Ratnagiri, Maharashtra	6444
10	Qualitative Assessment of weir and sluice structures by NDT method for Tangar dam, Ratnagiri, Maharashtra	6445
11	Estimation of safe charge weight per delay by conducting trial blast field investigations for excavation of hard rock intake site of Khand, Bivpuri HEP, Maharashtra	6452
12	Geophysical investigation for delineation of distressed zones in Khopad dam, Maharashtra	6463
13	Geophysical investigation for delineation of distressed zones in Telewadi dam, Maharashtra	6464
14	Site visit inspection report for checking out the feasibility of conducting NDT/Geo-Physical studies pertaining to Structural Health Assessment of Lower Mullamari Dam, Karnataka	6470
15	Estimation of safe charge weight per delay by conducting trial blast field investigations for excavation of hard rock during construction of Lower reservoir at Bhivpuri HEP, Maharashtra	6486
16	Estimation of site specific design parameters for Mat Sekawi H. E. project, Mizoram	6489
17	Estimation of average shear wave velocity (Vs30) at Tuichang Hydroelectric project, Mizoram	6490

Sr. No.	Technical Report Title	Technical Report No.
18	Estimation of site specific seismic design parameters for Tuichang hydroelectric project, Mizoram	6492
19	Qualitative assessment by NDT of foundation structures using ultrasonic pulse velocity methods at Ennore SEZ super thermal power project, Thiruvallur, Chennai, Tamilnadu	6498
20	Geophysical investigations for delineation of distressed zones in Bholawali dam, Maharashtra	6505
21	Geophysical investigations for delineation of distressed zones in Awashi dam, Maharashtra	6506
22	Geophysical investigations for delineation of distressed zones in Kondivali dam, Maharashtra	6507
23	Estimation of site specific seismic design parameters for Upper Bhavani pumped storage project, Tamilnadu	6513
24	Site inspection visit of checking out the feasibility of conducting various studies towards risk assessment of Kinnerasani project dam, Palvancha, Telangana	6514
25	Estimation of average shear wave velocity (Vs30) at Satyar Khad Medium Irrigation Project, Himachal Pradesh	6528
26	Qualitative assessment of concrete Trunnion beams by using NDT methods for Baglihar dam,Chanderkote, Ranban, J&K	6530

INSTRUMENTATION, CALIBRATION AND TESTING SERVICES

Division

- Hydraulic Instrumentation
- Hydraulic Machinery and Cavitation
- Current Meter Calibration

Areas of Specialization/ Expertise

- Calibration / Testing of turbines, pump sets, flow meters, filter, valves, field tests etc.
- Design, fabrication and installation of ATG and RSWG systems on models
- Hydrographic survey
- Fixing and installation of dam instruments
- Testing and calibration of Current Meters
- Canal Automation Facility
- **List of Clients**
- CWC
- Pump manufacturers
- BWSSB, Bangalore
- SAIL, Bokaro
- NEEPCO
- NHPC
- MAHAGENCO
- NPCIL
- GERI, Govt. of Gujarat
- KOPT, Kolkata
- NHDC, MP
- State Governments

Field Efficiency Test of One Turbine Unit of Koyna Stage-II for Flovel Energy Private Limited, Faridabad

Project Overview:

The Koyna Hydroelectric Project is one of the largest hydroelectric power plants in India. The projectconsists of four stages of power generation. All the generators are located in underground powerhouses excavated deep inside the mountains of the Western Ghats. Koyna Generating Station at Pophali has four Pelton turbine units rated at 70 MW in stage I and Four units rated at 80 MW in stage II. The eight units of Koyna Hydroelectric Project of Stage I & II were commissioned sequentially during the period from May 1962 to March 1966.Stage I&II turbine units utilize the water from the Shivaji Sagar reservoir formed by the Koyna Dam. The rated head acting on this Multijet Pelton units is 500 m. Field Studies after RMU works were carried out for unit 6. Discharge measurement through penstock was challenging due to limited space available near to MIV for mounting sensors of ultrasonic flowmeter and comparing discharge with real-time power measurements.

Study Overview:

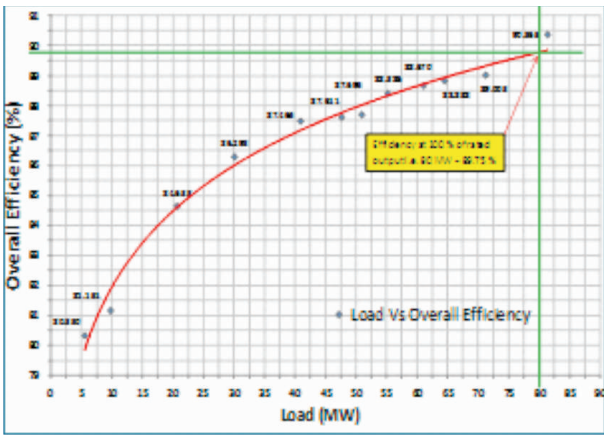
Efficiency evaluation for one Pelton turbine unit number six at stage -II was to be worked out by carrying out discharge measurement, head measurement, power measurement at site. These measurements were to be carried out covering the entire operating range of the hydro turbines in terms of head and power output.

Key Insights and Findings:

- Considering the generator efficiency of 97% turbine efficiency were calculated and based on the obtained efficiency values at the defined points i.e. 100%, 80%, 70%, and 60% of rated output.
- Weighted Average Efficiency of Turbine obtained after performance testing of the machine is 91.025% with having total measurement uncertainty of +/- 2.09% as per IEC 60041.
- During the investigations no flow fluctuations were observed during partial load operations. It is also observed that the turbine unit was operating smoothly and able to attain a full load of 80 MW without any issues.

Impact and Achievement:

- Efficiency increased after RMU and discharge per KWhr reduced compared to the test carried previously.



Installed USFM and computed efficiency curve

Numerical Model Study for Feasibility of Successfulness of Proposed Pump House on The Right Bank of The Ganga River at Jamania in Ghazipur District of Uttar Pradesh

Project Overview:

Chief Engineer, Irrigation Creation, Water Resources Department, Dehri, Bihar approached CWPRS for pump sump numerical model study. The project emphasis to reduce the irrigation dependency of Bihar (Sone Basin) on Karmnasha River by using Bihar's allocated quantity of Ganga water for irrigation in Sone basin, the Water Resource Department, Government of Bihar spearheaded an initiative by Jamania Pump Canal Irrigation Scheme, with the primary objective of effectively utilizing Bihar's allocated portion of Ganga water for irrigation purposes. This project is strategically situated within the Jamania Pump Canal Division, Mohania, and has been meticulously designed to facilitate the transfer of water from the Ganga River to agricultural lands in Bihar.

Study Overview:

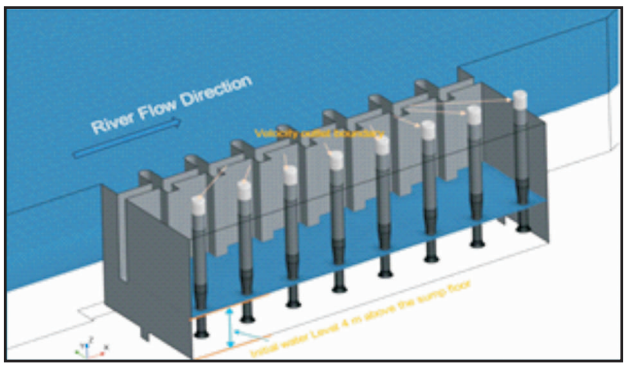
Measurement of discharge across River Ganga at the identified location using ADCP and Numerical Simulation of proposed pump house with site data collected. Feasibility of successfulness of the proposed pump house. Future effect on existing pump house of U.P. Govt. after construction of proposed pump house of Bihar.If proposed pump house location affects existing pump house, what should be the minimum separation distance of both the pump houses producing no adverse effect in future.

Key Insights & Findings:

- The total withdrawal is approximately 1.54 % of the total river discharge, when the river free surface level is 58 m above the mean sea level.
- If the velocity is a more typical > 0.5 m/s, river flow will be > 90, 000 cusecs and the withdrawal percentage also drop. At these fractions, approach-flow distortion from one intake to the other are effectively nil.
- Considering the total withdrawal of the pump houses a distance of 260 m or more between pump houses center line on the same bank is safer and can be operated without posing any functional risk to the existing infrastructure

Impact and Achievement:

- Transporting surplus water to water deficit region for agriculture purpose.
- Reduce the irrigation dependency of Bihar (Sone Basin) on Karmnasha River by using Bihar's allocated quantity of Ganga water for irrigation in Sone basin.



Proposed Pump House location and CAD intake model

Head Loss Test/ Measurement in The Water Conductor System of Rangit Power Station, South Sikkim

Project Overview:

The Rangit power stationis located on the left bank of the river Rangit in the state of Sikkim. The project comprises a surface power house with a total installed capacity of 60. The power station has three Vertical suspended Francis turbines of 20 MW each. The turbine is designed for direct coupling with three phase 50 cycles/sec Generator. The Generators are vertical shaft type having salient poles with closed circuit ventilation and suitable for coupling to a matching turbine.Shri Raju prasad singh, group senior manager(M), Rangit Power Station, Rangit Nagar, South Sikkim. Discharge measurement through penstock was challenging due to limited space available near to MIV for mounting sensors of ultrasonic flowmeter and comparing discharge with real-time power measurements.

Study Overview:

Carrying out actual head loss measurement in the water conductor system and performance evaluation of turbine units under varying operating conditions.

Key Insights & Findings:

- The average head loss of the plant observed during the field tests when three units are in operation is about 11.4m with efficiency of the units are about 86% at full load of 20 MW.
- The head loss of the water conductor system is about 6.1 m when the two units are in operation in full load of 20 MW with average efficiency of 88%.
- The average head loss of the plant is 4.5 m when single unit in operation at full load.
- During the observations flow fluctuations are not observed during the partial load at the time of testing. All units were operating without any noise and vibrations at the time of testing.
- The head loss will vary marginally with respect to variation of reservoir level.

Impact and Achievement:

- Transporting surplus water to water deficit region for agriculture purpose.
- Reduce the irrigation dependency of Bihar (Sone Basin) on Karmnasha River by using Bihar's allocated quantity of Ganga water for irrigation in Sone basin.

Proposed Pump House location and CAD intake model

Design, fabrication and installation of Automatic Tide Generation (ATG) system of the physical model of Tapi river at GERI, Gotri, Vadodara

Project Overview:

CWPRS, Pune successfully executed the design, fabrication, and installation of the Automatic Tide Generating System (ATG) at the Tapi River physical model at Gujarat Engineering Research Institute (GERI), Gotri, Vadodara, under the Government of Gujarat. The ATG enabled replication of tidal conditions to study flood protection measures for Surat city, particularly in response to the devastating floods of 2006. The project faced significant challenges due to nonlinearities in the model bed, hysteresis in mechanical components, and intake discharge variations, which complicated accurate tide generation. These were addressed through precise PID controller tuning-balancing Proportional (P), Integral (I), and Differential (D) gains-to ensure long-duration, repeatable tidal cycles without overshoot, thereby strengthening the reliability of flood management research.

Study Overview:

For the studies, Tapi physical hydraulic model of scale having horizontal scale (H) 1:300 and vertical scale (V) 1:80 was used in which ATG system was installed to generate tides.

The ATG system operates on a closed-loop control principle. Water enters the physical model bed through underground hume pipes connected to the delivery channel, circulated by pumps drawing from the sump tank, with a bypass return channel directing excess flow back to storage. Radial gates regulate flow, actuated by the ATG system. The user inputs required tide data into the PC, while actual water levels are sensed via a water-level sensor producing analog voltage. This signal is digitized by a high-speed DAQ card, converted into water-level readings, and displayed. The system continuously compares required versus actual levels to compute error. A PID algorithm processes this error to generate frequency and directional commands for the stepper motor. Through the DAQ card (PCI 1711L) and motor drive, the stepper motor actuates the gearbox and gate assembly, adjusting bypass gates to minimize error. This iterative process ensures precise water-level control, enabling accurate and repeatable tide generation in the model.

An in-house GUI based visual basic software was used for the front end and with Microsoft access database was used in back end for entering the tide data table. Further, discharge (model inflow) in the model tray needed to run the tide. PID gains to be considered for tuning the system so that there is no overshoot or undershoot and tides are produced automatically and repeated for a long duration of time. The number of radial gates to be considered for opening and closing along with proper selection of gear box with exact gear ratio were to be considered for smooth tidal operation

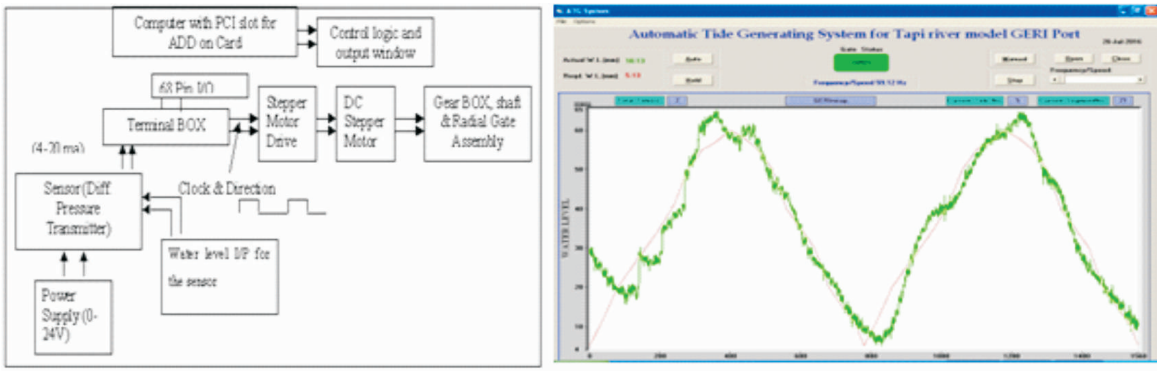
Key Insights & Findings:

- The system consists of mechanical and electronic components configured in a manner to control tidal discharge from 0.2 cumecs to 1.5 cumecs (i.e. 53 cusecs) and the accuracy of generated tides is better than 1 mm of water level of reference tide and is repeatable for a long period as much as 8 hours of model running.
- The use of PID algorithm has eliminated the overshoot in the tides and produced the stable, repeated and accurate tides in physical model.
- The ATG system produced the tides in the Tapi River physical model is a robust system and it was used for studying the effective flood protection works taken on the banks to protect Surat city from flood situation similar to that occurred in 2006.

Impact & Achievements:

- The accuracy of generated tides is better than 1 mm of water level of reference tide. It is repeatable for a long period as much as 8 hours of model running
- The use of PID algorithm has eliminated the overshoot in the tides and produced the stable, repeated and accurate tides in physical model.
- The ATG was used to produce the tides in the Tapi River physical model for studying the effective flood protection works done on the river banks to protect Surat city from flood situation similar to that occurred in the year 2006. The system is also useful to observe the tidal effect in ports and harbor model studies.

(A)ATG room with radial gates coupled to gate shaft along with supply & return channel (B) ATG setup in control room



(A) Block Diagram of ATG system(B) ATG generated output showing water level on Y axis (in mm) vs timeon X axis (in secs).

Bathymetry Survey of the plunge pool area and extraction of profiles of the plunge pool bottom of Srisailam Dam, A. P.

Project Overview:

The project involves conducting a bathymetry survey of the plunge pool area at the Srisailam Dam in Andhra Pradesh using an Integrated Bathymetry System (IBS) equipped with an echo-sounder and DGPS for real-time data acquisition. Supervised by the Superintending Engineer of the Dam Maintenance Circle, NSRSP, the survey aims to determine the maximum depth of the plunge pool, its exact location, and to generate an updated depth profile of the area. A key challenge lies in manoeuvring the survey boat precisely along 25-meter grid lines while maintaining a steady speed of 4-5 knots to ensure accurate data logging. The ultimate objective is to provide a reliable bathymetric assessment of the plunge pool for maintenance and safety purposes.

Study Overview:

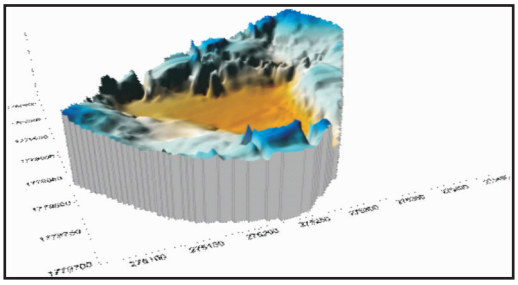
The bathymetry survey of the plunge pool at Srisailam Dam, Andhra Pradesh, was conducted using an Integrated Bathymetry System (IBS) to determine the maximum depth and generate updated depth profiles. The CWPRS team employed a motorized boat equipped with a dual-frequency single-beam echo-sounder (210 kHz and 33 kHz), GPS with MSK Beacon receiver, and EIVA navigation software for precise grid-based navigation and real-time data logging. The plunge pool was systematically divided into 25-meter grid lines to ensure complete spatial coverage. Daily reservoir water levels were recorded, echo-sounder calibration was performed using bar checks, and sound velocity was measured with a probe to ensure accuracy. The collected data was processed to produce contours and depth profiles across transects, providing a reliable and updated bathymetric assessment of the plunge pool for dam safety and maintenance planning.

Key Insights & Findings:

- The bathymetry survey of the plunge pool at Srisailam Dam produced detailed outputs including Digital Elevation Maps (DEM), contours, cross-section profiles, and 3D surface maps, compiled into a comprehensive technical report.
- Analysis revealed depth variations across transects near the apron and gate sections, though shallow areas with boulders and rocks along the banks limited precise boat manoeuvring, requiring data collection 15-20 meters away from the edges.
- These findings highlight the current depth profile and structural conditions of the plunge pool.
- A key recommendation is to conduct such surveys at regular intervals to establish a long-term bathymetric database will enable trend analysis, early detection of potential risks, and informed decision-making for maintenance and safety measures.
- Ultimately, periodic and technologically upgraded surveys will ensure the plunge pool remains stable, minimizing risks to dam operations and extending its service life.

Impact and Achievements:

- The study provided critical insights into its morphological characteristics and depth distribution.
- Analysis revealed that the central region of the plunge pool exhibits the deepest values, with depths gradually decreasing toward the upstream and downstream sections.
- Using advanced survey techniques and processing software, the maximum depth was accurately determined, and updated contours were generated to reflect the latest conditions.
- The depth profile was systematically categorized into five distinct zones, with values referenced to Mean Sea Level (MSL) and the apron level of 169.15 m. These findings contribute to a comprehensive understanding of the plunge pool's structural dynamics, offering valuable data for dam safety, maintenance planning, and future monitoring programs.



- (A) Bird's Eye view of Srisailam Plunge pooland (B) Surface map of Plunge pool.

Sr. No.	Technical Report Title	Technical Report No.
1	Selection of suitable sites and framing of technical specifications for setting up of Telemetry system in Cauvery Basin- Phase-I for Cauvery Water Regulation Committee (CWRC), Bengaluru	6392
2	On-Site Calibration of Flowmeters at Ajmer, Rajasthan for M/s NS Instruments and Controls, New Delhi	6398
3	Site calibration of flowmeters of Ammunition Factory, Khadki, Pune	6405
4	Numerical Studies on Raw Water Pump House at Iron Ore Benefication Plant for NMDC BacheliChattisgarh through Kalpataru Projects International Ltd.	6419
5	Bathymetry Survey of the plunge pool area and extraction of profiles of the plunge pool bottom of Srisailam Dam, A. P.	6426
6	Field efficiency test of one turbine unit of Koyna stage-II for Flovel Energy Private Limited, Faridabad	6432
7	Onsite efficiency test of 6 number of screw turbine plants in Vadodara branch canal of SSNL, Gujarat through M/s Jash engineering ltd. Indore	6454
8	Root cause analysis of premature damage of the turbine runner blade, suggest the remedial measures and efficiency evaluation of Dudhganga Hydropower Station, Dist. Kolhapur, Maharashtra	6461
9	Revival of dam instrumentation of Madhuban dam, Daman Ganga project, Gujarat: Twin Tube Piezometers	6465
10	Numerical studies on trailing dam pump house at iron ore beneficial plant for MDC, Bacheli, Chhattisgarh through Kalpataru Projects International Limited	6469
11	Numerical model study for feasibility of successfulness of proposed pump house on the right bank of the Ganga river at Jamania in Gazipur District of Uttar Pradesh.	6479
12	Head loss tests/measurement in the water conductor system of Rangit Power Station, South Sikkim	6508
13	Field efficacy test of one turbne unit of Koyna Stage-II for Flovel Energy Private Limited, Faridabad	6511
14	Up gradation of PC based Automatic Tide Generation System(ATG) system for Hydraulic model at Syama Prasad Mookerji Port, Kolkata	6524
15	Design, fabrication and installation of Automatic Tide Generation (ATG) system of the physical model of Tapi river at GERI, Gotri, Vadodara	6544

PROJECTS OF NATIONAL IMPORTANCE

COASTAL MANAGEMENT INFORMATION SYSTEM (CMIS)

Field observed data on coastal processes is one of the essential requirements for evolving long term plans and coastal protection measures. In view of this, for collection of such data a scheme of Coastal Management Information System (CMIS) was approved by the Government of India under the on-going Scheme 'Development of Water Resource Information System (DWRIS)' of Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR). Central Water and Power Research Station (CWPRS) was awarded the work as Project Executor for implementation of CMIS at two sites viz. Satpati in Maharashtra (Northern region) and Nani Danti- Moti Danti in Gujarat (Southern region). The total cost of the project is Rs. 6.95 Crores with total duration of the work as 6.5 years (up to March 2026) wherein various coastal data such as wave, tide, tidal currents, shoreline and cross-shore profile, suspended and bed sediments, river /creek discharges, winds, rainfall etc. is being collected. Further, these data would be processed to be used at front-end and linked to Centralised Data Centre (CDC). It is also envisaged to develop a mathematical model for these sites and design suitable coastal protection measures based on the findings. The equipment viz., detailed bathymetric survey instruments, tide gauge, Marine Current Profiler, Automatic weather station, Sieve shakers, Beach survey instruments, river discharge profiler, LISST for in situ sediment data and CTD meter, have already been procured and installed for data collection at both sites.

Comprehensive Monthly beach profile surveys and beach sediment analysis are being carried out at both the sites for a reach of about 1.5 km each as per the mandate of scheme. Bathymetric surveys have been carried out for pre monsoon and post monsoon periods. Similarly, wave data consisting of significant wave height, wave Direction etc. are being collected through wave rider buoy installed at site. Riverine data which include river discharge, salinity, temperature and river sediment load are being collected in pre-monsoon, monsoon and post monsoon periods. The meteorological data of rainfall, temperature, wind, humidity etc. have been collected for about four years.

The deliverables of this project will setup a comprehensive field monitoring programme which will help in the decision making in the long term and in a sustainable manner. This project will also provide data relevant to the designers, decision makers and modelling group that are not available otherwise. This project is very significant as it will reduce the risk on the stability of the shoreline by reducing dependence on assumed wave and current climate conditions because of sparse field networks and relatively limited historical records.

COMPREHENSIVE DAM SAFETY EVALUATION (CDSE)

With more than 6000 specified dams; India ranks third globally in the number of large dams. These dams have been a key factor in modernizing India and boosting its economy through increased power generation, irrigation and flood control. As India embraces the Water Vision @2047, an initiative focused on ensuring water security by 2047; the importance of maintaining existing dams is even more emphasized. The Dam Rehabilitation and Improvement Project (DRIP) implemented by the Government of India together with the Dam Safety Act, 2021; aim to strengthen the dam safety initiatives in India.

One of the service areas of CWPRS constitutes conducting specialized technical studies for dams. CWPRS has made significant contributions across India and in neighbouring countries like Afghanistan, Bhutan and Nepal by conducting advanced studies for dams.

In the year 2025-26, CWPRS marked a significant milestone by proposing to venture into COMPREHENSIVE DAM SAFETY EVALUATION (CDSE) studies, as mandated by the Dam Safety Act, 2021. The CDSE is a mandatory safety assessment prescribed under Section 38 of the Act, intended to determine the structural, hydraulic, seismic and overall operational conditions of every specified dam in India.

To undertake CDSE, a monitoring committee was constituted at CWPRS, comprising of experts from every domain of dam safety. The committee oversees and coordinates CDSE activities at CWPRS ensuring adherence to national regulations and guidelines.

As a pilot project, Water Resources Department (WRD), Maharashtra entrusted CDSE of four dams in the Khadakwasla Irrigation Circle viz. Khadakwasla, Panshet, Varasgaon and Temghar near Pune to CWPRS. With several other references being received from nationwide dam owners; CWPRS offers promising avenues to carry forward the task of Comprehensive Dam Safety Evaluation (CDSE), thus supporting the National mission of Dam Safety in India.

PART-III
DISSEMINATION OF INFORMATION

PAPERS PUBLISHED

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2. Govind Panvalkar, Rolland Andrade, Amol Chunade" Innovative use of dye tracers for identifying abutment leaks in Upper Mannar Dam, Maharashtra, India" published in "Journal of Indian Geotechnical" by Springer Nature, April 2025.
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76. Akhil P. S., Jitesh N. Vyas, Suresh Kumar B., Reshmi K. V., "Tipping Points at the Water's Edge: Exploring Hydrochemical and Spatial Stressors in Indian Coastal Systems", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

77. SupriyaNath, Akhil P. S., Jitesh N. Vyas, Suresh Kumar B., Reshmi K. V., "River Sediment Contamination: A Global Environmental Issue and Remediation Strategies", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

78. Kasturi V. Katte, Kuldeep Malik, A. A. Purohit, Prabhat Chandra, "Importance of Hybrid Modeling Technique in Assessment of Hydro-Morphodyamics for Proposed Bridge on Tapi River at Vadodara-Mumbai Expressway", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

79. Ajit D. Kadam, Pratap Singh Solanki, N. Vivekanandan, "Review on Integration of Network Technology with Mathematical Modelling Software", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

80. S. A. Beturkar, K. T. More, M. K. Verma, "Hydraulic Design and Performance Evaluation of Spillway and Energy Dissipator using Physical Modeling in High-Head Conditions- A Case Study", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

81. Shaneel Saurabh Sao, P. S. Solanki, Reshmi K. V., "A Hybrid Intelligence Framework for Smart Water Management System using Artificial Intelligence and Machine Learning", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

82. Komal S. Vighe, Rahul Sawant, A. K. Singh, J. Sinha, "Mathematical Model Studies for Assessment of Coastal Processes at Achara in Sindhudurg District, Maharashtra", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

83. Rahul Sawant, A. K. Singh, Satheeshkumar J., J. Sinha, "Numerical Modeling of Wave Transformation and Wave Tranquility for Versova Fishing Harbour, Maharashtra", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

84. Vaibhav Konde, Shivani Sahu, Prabhat Chandra, M. Phani Kumar, V. B. Sharma, "Expansion of Deendayal Port: Dredging and Disposal Strategy for Proposed Terminal Developments", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

85. Arun Kumar, Jotsana G. Ambekar, Sreedevi S., Sachin Kushwaha, S. S. Kerimani, "Assessment of Additional Requirement of Spur along the Downstream Right Bank of Kosi Barrage through Hydraulic Modeling", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

86. H. R. Khandagale, MilankumarSomeshwara, ShreekantPawar, S. R. Swami, G. V. Ramana Rao, "Evaluating the Impact of Repairs on a Current Meter's Calibaration", fopublished in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

87. Milankumar Someshwara, H. R. Khandagale, Sachin Karpe, Shreekant Pawar, G. V. Ramana Rao, "Performance Testing of Non-Contact Radar based Water Level Sensors using Rating Trolley", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha..

88. Madhavi Gajre, S. N. Ali, "Studies for Diversion of Nala Passing through Proposed Integrated Steel Plant (ISP) at Nimdih, Saraikela, Jharkhand- A Case Study", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

89. Naval Jagatap, A. K. Singh, J. Sinha, "Computational Hydrodynamics for Coastal Infrastructure Planning: Case Study of the Suvali Outfall Site", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

90. Vaibhawi Roy, A. K. Singh, J. Sinha, Prabhat Chandra, "Numerical Evaluation of Harbour Layout Efficiency under Predominant Wave Conditions at Murdeshwar", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

91. Archana S. Shinde, N. Vivekanandan, C. Srishailam, "Analysis of Rainfall Data of Panvel-Matheran using Statistical Approach", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

92. Manasi M. Mulay, N. Vivekanandan, C. Srishailam, "Estimation of Probable Maximum Precipitation using Hershfield Method",published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

93. N. Vivekanandan, C. Srishailam, "Estimation of Peak Flood Discharge using Rational Formula and Synthetic unit Hydrograph Approach", published in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela under the aegis of Indian Society for Hydraulics (ISH), Pune from 18-20 December, 2025 at NIT Rourkela, Odisha.

94. Pravin S. L. Kureshi, J. Shivarama, "Academic Libraries as Enablers of SDG-Oriented Research: A Study of Digital Resources and Research Support Services", for possible publication in "International seminar on "Exploring Indian Knowledge System: Past, Present and Future"

organized by Department of Sanskrit and Central Library, Arya Vidyapeeth College, Guwahati on 23rd December 2025.

95. Sanket Hulage, Shishir Pujari, P. S. Solanki," Supervision of environmental conditions in data centre using in-house developed real-time data acquisition system" published in International Journal of "Scientific Research in Computer Science and Engineering" December 2025.

96. Poornima Chandra Lekha Posa , Conrad Wasko , Wenyu Wu, S. Sreedevi ,Rajashri Das Bhowmil," A spatiotemporal analysis of hydro-meteorological factors driving floods" published in Journal of "Hydrology: Regional Studies" January 2026.

97. Arun Kumar,Sarvesh Kumar Yadav, published in International conference on "Transforming Library Services in the AI Era: Library Services, User Engagement and Community Impact", February 2026

98. N. Vivekanandan," Hydrological Investigations for the Railway Bridges in New Railway Line Between Murkongselek, Assam and Pasighat, Arunachal Pradesh" published in Symposium: CESAFIESTA 4.0 organized by IIT Ropar, February 2026.

99. Hanumanthappa M. S., Divyesh Rohit, Shyamli Paswan, Khalil Bagwan, M. Selva Balan," Importance of Pressure Monitoring in Safeguarding the Structural Health of Concrete Dams" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

100. Hanumanthappa M. S., Sheetal Waghmare, Chetan Khadane, Divyesh Rohit, M. Selva Balan," Applicability of Mass Body Temperature Measurements in Safety Assessment of Concrete Spillway Structures" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

101. Lata Gupta, M. Selva Balan, K. Kumar, S. Ajai K. U. Farande, Varsha Jain," Remotely Operated Vehicle for Structural Health Assessment of Dams" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

102. Sanjay A. Burele, G. C. Singarkar,Pravuram Panda," Determining the In-Situ Properties of Dam is Crucial for Rehabilitation" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

103. Sanjay A. Burele,KhalilBagwan,G. C. Singarkar,Pravuram Panda," Slope Stability Analysis of Rock Fall at Panshet Hydro Power Generation Station, District-Pune, State-Maharashtra" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

104. Tanusree Samanta, Pooja Chand, J. S. Edlabadkar," Rehabilitation of Earthen Dam for Seepage Mitigation and Stability Improvement - A Case Study" published in "International Conference on

Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

105. Anup K. Singh, Ria Singhal, M. Selva Balan, P. D. Kamalasekaran, Prabhat Chandra," Enhanced Dam Safety Assessment through Advanced CNN-LSTM-Attention Models for Predicting Dam Seepage and Pore Water Pressure: A Comprehensive Machine Learning Approach" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

106. M. Selva Balan, Anuja Rajagopalan, Shailaja Patil, Awaise Hanegaonkar," Satellite-Derived Bathymetry (SDB) for Reservoir Capacity Estimation" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

107. M. Selva Balan, Awaise Hanegaonkar, Anuja Rajagopalan," IoT Enabled Fiber Optic Sensor System for Dam Health Monitoring" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

108. M. Selva Balan, Shailaja Patil, Anuja Rajagopalan," Satellite Remote Sensing and Machine Learning Approach for Reservoir Water Spread Area Estimation And Future Projection" published in "International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc-Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB) during 13-14 February, 2026 at IISc Bengaluru.

109. Anil Bagwan, Sanjay Nath Jha," Accessing impacts of climate change-driven sea level rise on hydrodynamics and sedimentation in Astaranga harbour area, Odisha." published in "World Ocean Science Congress (WOSC 2026)" organized by CSIR-National Institute of Oceanography, Dona Paula, Goa during 23-26 February 2026.

110. Sanjay Nath Jha, Prabhat Chandra, "Application of mathematical modeling for sedimentation challenges in a coastal fishing harbour" published in World Ocean Science Congress (WOSC 2026)" organized by CSIR-National Institute of Oceanography, Dona Paula, Goa during 23-26 February 2026.

111. Animesh Basu,K. A. Chavan,A. A. Purohit,M. M. Vaidya," Assessment of Suitability of Marina in Macro Tide Dominated Region- Tidal Hydrodynamic Consideration" published in "10th Conference on "Physical Modelling in Coastal Engineering: Coastlab 2026" organized by International Association of Hydro-Environment Engineering and Research (IAHR) and hosted by Indian Institute of Technology Madras during 23-27 February, 2026 at their campus.

112. V. K. Shukla,V. D. Kokane, J. Sinha," Feasibility Study through Physical Model Experiments for Permanent Opening of HDC Water Spread/Dock Basin by Removing Existing Lock Gate and Adjoining River Bank" published in "10th Conference on "Physical Modelling in Coastal Engineering: Coastlab 2026" organized by International Association of Hydro-Environment Engineering and Research (IAHR) and hosted by Indian Institute of Technology Madras during 23-27 February, 2026 at their campus.

113. V. K. Shukla, Naren A., B. L. Meena, J. Sinha," Physical Modelling for Reducing Siltation by Reclamation in the Ernakulam Channel at Cochin Port" published in "10th Conference on "Physical Modelling in Coastal Engineering: Coastlab 2026" organized by International Association of Hydro-Environment Engineering and Research (IAHR) and hosted by Indian Institute of Technology Madras during 23-27 February, 2026 at their campus.

114. Uday B. Patil, A. V. Mahalingaiah, Ganesh N. S," Design of Offshore Breakwater for the Development of Ro-Ro Jetty at Mandwa, Maharashtra." published in "10th Conference on "Physical Modelling in Coastal Engineering: Coastlab 2026" organized by International Association of Hydro-Environment Engineering and Research (IAHR) and hosted by Indian Institute of Technology Madras during 23-27 February, 2026 at their campus.

115. Supriya Nath, Dudekula Nikhil Kumar, Jitesh Vyas, Prabhat Chandra, "A spatiotemporal analysis of hydro-meteorological factors driving floods" published in the Water Environment Research Journal February 2026.

PARTICIPATION IN SEMINARS/ SYMPOSIA CONFERENCES/ WORKSHOPS

Sl. No.	Title	Event, Place, Date	Name of Officer
1.	Symposium on "Dam Safety" organized by National Dam Safety Authority (NSDA)	New Delhi 07th April, 2025	Shri Hanumanthappa M. S., Sci.'D' Smt. J. S. Edlabadkar, Sci.'D' Shri Sachin D. Marulkar, Sci.'D'
2.	National Conference on "The Role of Artificial Intelligence (AI) in the Power and Water Resources Sectors" organized by CBIP	New Delhi 24-25April, 2025	Dr. M. Selva Balan, Sci. 'E' Shri Santosh Kori, Sci.'B'
3.	5th Annual Conference on "Digitalization on Water Network Management" organized by India infrastructure Publishing Pvt. Ltd.	New Delhi 06-07 May, 2025	Dr. (Smt.) Mandira Majumder, Sci.'D' Dr. (Smt.) Annapurna Patra, Sci.'D'
4.	Workshop on "Prevention, Prohibition and Redressal of Sexual Harassment of Women at Work Place" organized by ISTM, New Delhi	New Delhi 09-10 June, 2025	Smt. Lata Gupta,Sci.'D' Smt. Anuja Rajgopalan,Sci.'C'
5.	Seminar on "Weathering & Product Launch" organized by Khushboo Scientific Pvt. Ltd. Pune	Pune 08thAugust, 2025	Shri Balachandran K, ARO
6.	Forum on "Resilient Coasts, Thriving Communities: A Sea of Solutions" organized by Govt. of Kerela and Asian Development Bank (ADB)	Kochi, Kerela 18-19 August, 2025	Shri M. M. Vaidya, Sci. 'D'
7.	Workshop on "XMLisation of Standard and Online Standards Development" for CED 46 and CED 47	Mumbai 29thAugust, 2025	Shri A. A. Purohit, Additional Director
8.	02nd International Conference on "Innovations in Smart and Sustainable Infrastructure (ISSI 2.0)" organized by Department of Civil Engineering, Pandit Deendayal Energy University, Gandhinagar	Pandit Deendayal Energy University, Gandhinagar 28-30 August, 2025	Smt. Harshali R. Khandagale, Sci. 'C'

Sl. No.	Title	Event, Place, Date	Name of Officer
9.	National seminar on "Managing Aging and Distressed Hydro Power Projects: Challenges and Opportunities" organized by Central Water and Power Research Station (CWPRS), Pune in association with Indian Geotechnical Society (IGS), Pune Chapter	CWPRS, Pune 11-12 September, 2025	Dr. M. Selva Balan, Additional Director Dr. Reshmi K. V., Joint Director Shri Hanumanthappa M. S., Sci.'D' Shri B. Suresh Kumar, Sci.'D' Smt. J. S. Edlabadkar, Sci.'D' Shri Sachin Marulkar, Sci.'D' Dr. (Smt.) Prajakta Gadge, Sci.'D' Dr. Rolland Andrade, Sci.'D' Dr. Dhanajay Naidu, Sci.'D' Dr. (Smt.) Mandira Majumder, Sci.'D' Dr. Prakash Palei, Sci.'D' Shri G. V. K. Moorthy, Sci.'C' Shri Sachin Khupat, Sci.'C' Dr. Santosh Suragani, Sci.'C' Dr. (Smt.) Tanushree Samanta, Sci.'C' Shri G A Rajkuamar, Sci.'C' Smt. Shivani Sahu, Sci.'C' Shri Sunil Pillai, Sci.'C' Dr. Sarbjeet Singh, Sci.'C' Dr. Vijay Ghodake, Sci.'C' Shri Nirbhay Narayan Singh, Sci.'B' Shri Mahendra Meena, Sci.'B' Shri Neeraj Meena, Sci.'B' Shri Khalil Bagwan, Sci.'B' Shri Shyamli Paswan, Sci.'B' Smt. Pooja Chand, Sci.'B' Shri Amol Chunade, ARO Shri Nagaraj M, ARO Smt. Archana K. Pund, ARO Smt. Sheetal Waghmare, ARO
10.	Workshop on "Advanced Numerical Modeling for Geotechnical Engineering" organized by Indian Institute of Technology Kanpur in association with IGS Kanpur Local Chapter	IIT Kanpur 06-08 November, 2025	Smt. J. S. Edlabadkar, Sci.'D' Shri Neeraj M. Meena, Sci.'B'
11.	07th National Conference on "Coastal, Harbour & Ocean Engineering (INCHOE 2025) " organized by Central Water & Power Research Station, Pune under the aegis of Indian Society for Hydraulics (ISH), Pune	CWPRS, Pune 06-07 November, 2025	Dr. Prabhat Chandra, Director Dr. M. Selva Balan, Additional Director Shri A. A. Purohit, Additional Director Dr. (Smt.) Reshmi KV, Joint Director Dr. Jiweshwar Sinha, Sci. 'E' Shri S. G. Manjunatha, Sci. 'E'

Sl. No.	Title	Event, Place, Date	Name of Officer
			Shri G. V. Ramanna Rao, Sci. 'E' Shri M. M. Vaidya, Sci. 'D' Shri B. R. Tayade, Sci. 'D' Shri M. S. Bist, Sci. 'D' Shri J. A. Shimpi, Sci. 'D' Shri B. Suresh Kumar, Sci. 'D' Dr. M. Phani Kumar, Sci. 'D' Shri V. K. Shukla, Sci. 'D' Dr. K. Kumar, Sci. 'D' Shri T. K. Swain, Sci. 'D' Shri R. Vigneswaran, Sci. 'C' Shri P. S. Solanki, Sci. 'C' Shri G. A. Rajkumar, Sci. 'C' Smt. A. A. Sonawane, Sci. 'C' Shri Raman Murthy G. V., Sci. 'C' Shri Amit Kulhare, Sci. 'C' Dr. A. K. Singh, Sci. 'C' Dr. Sanjay A. Burele, Sci. 'C' Shri AnimeshBasu, Sci. 'C' Shri Sudheer S. Chavan, Sci. 'C' Shri B. L. Meena, Sci. 'C' Shri Parag A.Kashyape, Sci. 'C' Smt. Shivani Sahu, Sci. 'C' Shri K. B. Bobade, Sci. 'C' Shri R. K.Chaudhari, Sci. 'C' Shri Amol S. Borkar, Sci. 'C' Shri Uday B. Patil, Sci. 'C' Shri H. C. Patil, Sci. 'C' Dr. (Smt.) Tanusree Samanta, Sci. 'C' Shri Naval Jagatap, Sci. 'B' Dr. (Smt.)Maneesha Sebastian, Sci. 'B' Dr. Naren A., Sci. 'B' Shri Tomesh Kumar Sahu, Sci. 'B' Shri Shailendra Pratap Singh, Sci. 'B' Dr. Praveen K M, Sci. 'B' Shri Neeraj M. Meena, Sci. 'B' Shri Vijay D. Kokane, Sci. 'B' Dr. Anup Kumar Singh, Sci. 'B' Dr. Anil Bagwan, Sci. 'B' Shri Sanjay NathJha, Sci. 'B' Shri Santosh Kori, Sci. 'B' Smt. Archana S. Shinde, ARO

Sl. No.	Title	Event, Place, Date	Name of Officer
			Shri G. R. Pardeshi, ARO Shri Vaibhav P. Konde, ARO Shri Ganesh N. S., ARO Shri Saurabh Singh, ARO Shri Shrikant J. Shinde, ARO Smt. Manasi Mulay, ARO Shri Vishal Telgote, ARO Ms. KomalVighe, ARO Ms. Vaibhavi Roy, ARO Shri Milankumar Someshwara, RA Shri K. R. Karambelkar, RA Shri Deepak Sharma, RA Shri Shobhit Singh, RA Shri Shaneel S. Sao, RA
12.	30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela in association with Indian Society for Hydraulics (ISH), Pune	NIT Rourkela 18-20 December, 2025	Dr. Jiweshwar Sinha, Sci.'E' Shri M. K. Verma, Sci.'D' Shri V. K. Shukla, Sci.'D' Shri Mahender Singh Bist, Sci.'D' Shri T. K. Swain, Sci.'D' Shri V. S. Ramarao, Sci.'D' Dr. A. K. Singh, Sci.'C' Shri S. S. Kerimani, Sci.'C' Dr. Sanjay A. Burele, Sci.'C' Mrs. Vaishali P. Gadhe, Sci.'C' Shri AnimeshBasu, Sci.'C' Shri G. V. R. Murthy, Sci.'C' Shri B. S. Sundarlal, Sci.'C' Shri Rajeev K. Chaudhari, Sci.'C' Dr. K. C. Sahu, Sci.'C' Shri B. L. Meena, Sci.'C' Smt. Shivani Sahu, Sci.'C' Shri Pratap Singh Solanki, Sci.'C' Shri P. K. Dorle, Sci.'C' Shri Uday B. Patil, Sci.'C' Shri VineshKatte, Sci.'C' Smt. H. R. Khandagale, Sci.'C' Shri N. Vivekanandan, Sci.'C' Ms. MadhaviGajre, Sci.'B' Dr. Praveen K. M., Sci.'B' Dr. Naren A., Sci.'B' Shri Naval Jagatap, Sci.'B'

Sl. No.	Title	Event, Place, Date	Name of Officer
			Shri Tomesh Kumar Sahu, Sci.'B' Smt. Kasturi V. Katte, Sci.'B' Shri Srinivas Billakanti, Sci.'B' Dr. Akhil P. S., Sci.'B' Shri Ajit D. Kadam, Sci.'B' Smt. Komal S. Vighe, ARO SmtVaibhawi Roy, ARO Shri Vaibhav P. Konde, ARO Smt. SibratA. Beturkar, ARO Shri Rahul Sawant, RA Shri M. Someshwara, RA Shri ShaneelSaurabh Sao, RA
13.	Seminar on "Exploring Indian Knowledge System: Past, Present and Future" organized by Department of Sanskrit and Central Library, Arya Vidyapeeth College, Guwahati	Arya Vidhyapeeth College, Guwahati 23rd December, 2025	Ms. Parvin S. L. Kureshi, LIA
14.	Workshop on "Competencies of Librarians in the era of AI" organized by Pune University Library and Information Science Alumni Association (PULISAA), Savitribai Phule Pune University	Savitribai Phule Pune University 17th January, 2026	Ms. Parvin Shaikh Latif Kureshi, LIA
15.	Workshop on "Coastal Management and Information System (CMIS)" organized by National Institute of Oceanography (NIO), Goa	NIO, Goa 30-31 January, 2026	Shri G. V. Ramanarao, Sci.'E' Shri Sanjay Nath Jha, Sci.'B'
16.	"International Conference on Dam Safety (ICDS-2026)"organized by WRD, Govt. of Karnataka and DoWR, RD & GR, Govt. of India in association with CWC, IISc Bengaluru, the World Bank and the Asian Infrastructure Investment Bank (AIIB)	IISc Bengaluru. 13-14 February, 2026	Dr. Selva Balan,A.D. Shri Hanumanthappa M.S., Sci.'D' Dr. (Smt.) TanusreeSamanta,Sci.'C' Smt Anuja Rajagopalan,Sci.'C' Shri Khalil Bagwan, Sci.'B' Dr Anup Kumar Singh, Sci.'B' Shri Awaise Hanegaonkar,Sci.'B'
17.	Participation in "CESAFIESTA 4.0"	IIT Ropar 21-22 February, 2026	N. Vivekanandan, Sci.'C'
18.	Conference on"World Ocean Science Congress (WOSC 2026)" organized by CSIR-National Institute of Oceanography, Dona Paula, Goa	NIO, Goa 23-26 February, 2026	Dr. Anil Bagwan, Sci.'B' Shri Sanjay Nath Jha, Sci.'B'

Sl. No.	Title	Event, Place, Date	Name of Officer
19.	10th Conference on "Physical Modelling in Coastal Engineering: Coastlab 2026" organized by International Association of Hydro-Environment Engineering and Research (IAHR) and hosted by Indian Institute of Technology Madras	Indian Institute of Technology Madras 23-27 February, 2026	Dr. Naren A, Sci.'B' Shri Vijay D. Kokane, Sci.'B' Shri Animesh Basu, Sci.'C' Shri Uday B. Patil, Sci.'C'
20.	"Information Security: Challenges, Regulatory framework and Compliances" organized by IISER, Pune	IISER, Pune 06th March, 2026	Shri P. S. Solanki, Sci.'C'
21.	Regional conference of State Secretaries for reviewing ongoing projects/schemes of DoWR, RD & GR	Hyderabad, Telangana 26th March, 2026	Shri A. A. Purohit, Director

INVITED LECTURES DELIVERED

Sl. No.	Title	Event	Place & Date	Name of Officer
1.	Role of physical hydraulic model studies: theory and concept of resorting to hydraulic model studies in Hydel Civil Design	34th Induction training program organized by NWA, Pune during 21st October 2024 to 06th June 2025 at NWA	NWA, Pune 09th April, 2025	Shri V. S. Ramarao, Sci.'D'
2.	Model studies related to Hydro-mechanical Equipment		NWA, Pune 25th April, 2025	Shri K. C. Sahu, Sci. 'C'
3.	Reservoir Sedimentation: Bathymetry Survey (Remote Sensing and Hydrographic) with a case study; Reservoir Sedimentation Studies under DRIP: Methods, Codal provisions and case studies		NWA, Pune 29th April, 2025	Shri P. S. Kunjeer, Sci. 'D'
4.	Structural Health Monitoring through Instrumentation of Dams (Hydrometeorological, Geotechnical, Geodetic and Seismic Instruments): Need, Types, installation, testing and commissioning, data acquisition and dissemination, result interpretation and analysis etc		NWA, Pune 30th April, 2025	Shri Hanumanthappa M. S., Sci. 'D'
5.	Geophysical investigations for identifying seepage zones in concrete, masonry and earthen dams		NWA, Pune 01st May, 2025	Dr. G. D. Naidu, Sci. 'D'
6.	Remedial measures for controlling seepage through gravity dams			Shri S. J. Pillai, Sci. 'C'
7.	Seismic safety evaluation of existing dams			Shri Hanumanthappa M. S., Sci. 'D'

Sl. No.	Title	Event	Place & Date	Name of Officer
8.	Introduction to Hydraulic Modelling for River Engineering	5 days Training Session on "Model Studies for River Engineering Works" at NEHARI, Guwahati 24-25 June, 2025	NEHARI, Guwahati 24th June, 2025	Shri B. Raghuram Singh, Sci.'D'
9.	Introduction to Numerical Modelling for River Engineering			Shri Prasad Kunjeer, Sci. 'D'
10.	Introduction to HEC-RAS software			Shri Naved Ali Syed, Sci.'D' Smt. Snehal B Tayade, Sci. 'B'
11.	Hands-on demo of HEC-RAS or Canal design and Flume			Smt. Snehal B Tayade, Sci. 'B'
12.	Design of Hydraulic structures and construction materials used in River Engineering studies		NEHARI, Guwahati 25thJune, 2025	Shri B. Raghuram Singh, Sci. 'D'
13.	Introduction to GIS and HEC-HMS software for catchment delineation			Shri Prasad Kunjeer, Sci. 'D'
14.	Hands-on for catchment delineation and development of SUH using CWC method			Shri Prasad Kunjeer, Sci. 'D' Smt. Snehal B Tayade, Sci. 'B'
15.	Introduction to RAS Mapper for setting up of Numerical Model of River and developing 1D Mathematical Model with Hands-on			Shri Naved Ali Syed, Sci.'D' Smt. Snehal B Tayade, Sci. 'B'
16.	Developing 1D river model for flood plain with demo		NEHARI, Guwahati 26thJune, 2025	Smt. Snehal B Tayade, Sci. 'B'
17.	Hands-on for developing 1D river model			Smt. Snehal B Tayade, Sci. 'B'
18.	Introduction to Levees in HEC RAS with hands-on			Smt. Snehal B Tayade, Sci. 'B'
19.	Introduction to 2D model in HEC-RAS		NEHARI, Guwahati 27thJune, 2025	Shri Naved Ali Syed, Sci.'D'

Sl. No.	Title	Event	Place & Date	Name of Officer
20.	Development of 2D model in HEC-RAS - Hands-on			Shri Naved Ali Syed, Sci.'D'
21.	Hydraulic model studies for River Engineering		NEHARI, Guwahati 28th June 2025	Shri B. Raghuram Singh, Sci. 'D'
22.	Introduction to hydraulic tructures in HEC-RAS			Smt. Snehal B Tayade, Sci. 'B'
23.	Introduction to Dam break analysis with Demo			Shri Naved Ali Syed, Sci.'D'
24.	Water Security and Water Conservation	"Water Security and Water Conservation" in 09th World Water Summit -2025 organized by Energy and Environment Foundation	NDMC-Convention Centre, New Delhi 01-02 July, 2025	Shri N. Vivekanandan, Sci. 'C'
25.	Advanced Instrumentation & SCADA	Training program on "Dam Instrumentation" organized by NWA, Pune during 14-18 July 2025 at NWA.	NWA, Pune 16th July 2025 Wednesday	Dr. M. Selva Balan, Additional Director
26.	Studies for In-situ Evaluation of Engineering Properties of Dams-Elimination of Density & Detection of Weak Zones			Dr. Rolland Andrade, Sci. 'D'
27.	Analysis and Interpretation of Data, Elements of Finite and District Element Technologies, including Measurement of Pore Water Pressures		NWA, Pune 17th July, 2025	Shri Hanumanthappa M. S., Sci. 'D'
28.	Underwater ROV System for Internal Inspection of Water and Pump Intake Structures, Tailrace Channel and Pipelines for Crack and Surface Detection			Smt. Lata Gupta, Sci. 'D'

Sl. No.	Title	Event	Place & Date	Name of Officer
29.	Hands-on Session on HEC-RAS	Training program Level-III for Extra Assistant Directors of Hydromet Cadre of CWC under special arrangement organized by NWA, Pune during 28th July to 05th August 2025	NWA, Pune 04th August, 2025	Shri Arun Kumar, Sci.'D' Smt. Jotsana Ambekar, Sci.'B'
30.	Hydrology and Water Resources Engineering	Lecture for 3rd Year B. Tech (Civil) Students of NICMAR University, Pune on 8th August 2025	NICMAR University, Pune 08thAugust, 2025	Shri N. Vivekanandan, Sci.'C'
31.	PFMS: e-bill, PFMS: EIS - Salary, GFR, Entries to be checked before sending service book to ZAO for issuing qualifying service certificate, Common & Major Objections by ZAO while issuing the qualifying service certificate, Audit of pay fixation before retirement, Bhavishya Portal	Lecture for staff posted in DDO's in a special course on "GEM/PFMS" organized by Ministerial Staff Training Unit (MSTU), Pune during 11-12 August, 2025	MSTU, Pune 12th August, 2025	Smt. Sony Kumari, Sr. Account Officer
32.	Material Testing in Earthern/ Embankment Dams	Training Program on "Assessment of Structural Safety of Existing Dam" organized by NWA, Pune during 25th August to 04th September, 2025	NWA, Pune 26th August, 2025	Shri Neeraj M. Meena, Sci.'B'
33.	Remodelling/Retrofitting of Dam Spillway (Hydraulic Aspects)		NWA, Pune 28th August, 2025	Dr. (Smt.) Prajakta. P. Gadge, Sci.'D'
34.	Remodelling/Retrofitting of Dam Spillway (Structural Aspects)			Shri Hanumanthappa M. S., Sci.'D'
35.	Evaluating Seismic Performance of Dams (Site Specific Seismic Design Parameter)			Dr. Suman Sinha, Sci.'C'

Sl. No.	Title	Event	Place & Date	Name of Officer
36.	Evaluating Seismic Performance of Dams (Structural Performance Evaluation)			Shri Hanumanthappa M. S., Sci.'D'
37.	Modelling Approaches for Sediment Management in Hydro Power Projects	Keynote lecture in National Conference on "Sedimentation Management for Sustainable Water and Hydropower Development" jointly organized by Central Board of Irrigation and Power (CBIP) and Indian National Committee on Large Dams (INCOLD) in association with Indian National Hydropower Association (INHA)	CBIP, New Delhi 04-05 September 2025	Shri M. K. Verma, Sci.'D'
38.	Microplastics as Emerging Contaminants: Challenges in Monitoring, Sampling and Analysis	Faculty development program (FDP) organized by KPRIT collage of Engineering, Hyderabad	Online mode 25th September, 2025	Dr. Srinivas Billakanti, Sci.'B'
39.	Service Book and CGEIS -1, Service Book and CGEIS - 2, CCS (Leave) Rules, CCS (LTC) Rules, Pay Fixation -1, Pay Fixation -2	Induction Course for Newly Recruited Multi-Tasking Staff organized by MSTU, Pune during 26th September - 10th October 2025	ICAI Bhawan, Pune 01st October, 2025	Smt. Sony Kumari, Sr. Accounts Officer
40.	Local solutions for Local Needs	In-house developed "Image Velocimetry Method" in the Innovation Workshop on Hydrometry-IAHS 2025 co-organized by WMO Hydrohub and IAHS MOXXI Working Group	IIT Roorkee 11th October, 2025	Dr. M. Selva Balan, Additional Director

Sl. No.	Title	Event	Place & Date	Name of Officer
41.	Dam Safety: Delineating Seepage Zones & Evaluation of In-situ Engineering Properties	Training program on "Disaster Management" organized by UGC-Malaviya Mission Teachers Training Centre, SPPU, Pune for newly appointed College/ University teachers during 03-16 October 2025	Online Mode 06th October, 2025	Dr. Rolland Andrade, Sci.'D'
42.	Non-Contact Sensors in Dam Health Monitoring and SCADA Interface Technologies	Training program on "Instrumentation and Monitoring for Dams Safety" organized by CSMRS, New Delhi during 30-31 October 2025	CSMRS, Delhi 31st October 2025	Dr. Anup Kumar Singh, Sci.'B'
43.	Workshop on PFMS, Preparation of Salary Bill for OPS/NPS, Preparation of Other Bills related to allowances to employees & various expenses, FR & SR relating to Financial Administration, GFR and Delegation of Financial Powers, Procedure relating to administrative approval and financial approval and submission of bills to ZAO	Training of Office Superintendent as per new Recruitment rules during 31st October to 14th November	MSTU, PUNE 6th November, 2025	Smt. Sony Kumari (Sr. Account officer)

Sl. No.	Title	Event	Place & Date	Name of Officer
44.	CCS (Joining Time) Rules in case of joining time, deputation & transfer (TA Rules) / Loans and advances, Rules and procedure to be followed in case of foreign service retirement, CGHS Rules, Procedure of dmission in hospitals, emergency, AMA, Medical Attendance Rules, Preparation of Pension Papers (OPS & NPS), Calculations related to GPF/ Gratuity/ Leave encashment etc., Submission of Pension Papers on Bhavishya Portal	Training of Office Superintendent as per new Recruitment rules during 31st October to 14th November	MSTU, PUNE 7th November, 2025	
45.	Physical modeling and Field Data Collection in Coastal Engineering	Lecture for B.Tech (Civil) &M.Tech (CTM, IPM) Students of NICMAR University	NICMAR University 15th November, 2025	Shri Shimpi J. A., Sci. 'D'
46.	Hydrographic Surveys & Recent Advancements	Training program on "Reservoir Sedimentation and Management" organized by NWA, Pune during 08-12 December, 2025 at NWA	NWA, Pune 9th December, 2025	Dr. M. Selva Balan, Additional Director
47.	Bathymetry Data Analysis			Shri M. S. Bist, Sci. 'D'
48.	ADCP and its demonstration		NWA, Pune 10th December, 2025	Smt. Lata Gupta, Sci. 'D'
49.	Model Studies of Structures on Braided River (Kosi)	Keynote Lecture in 30th International Conference on "Hydraulics, Water Resources, River and Coastal Engineering (HYDRO-2025)" organized by National Institute of Technology (NIT) Rourkela in association with Indian Society for Hydraulics (ISH), Pune during 18-20 December 2025 at NIT Rourkela	NIT,Rourkela 20th December, 2025	Dr. Sanjay A. Burele, Sci. 'C'

Sl. No.	Title	Event	Place & Date	Name of Officer
50.	CWPRS: Strengthening India's water security through Research and Innovation	11th B.G. Walimbe Memorial Lecture organized by Institution of Engineers (India), Pune chapter	Institution of Engineers (India), Pune chapter 23rd December, 2025	Dr Prabhat Chandra, Director
51.	Hydrological impact assessment and water availability studies for Kaiga Nuclear Power project, Uttar Kannada, Karnataka	Keynote Lecture in an International Conference on "Wetlands and Water Resources for Sustainable Development (WET-WAR 2025)" organized by National Institute of Technology (NIT), Patna during 29-31 December, 2025 at their campus.	NIT Patna 30th December, 2025	Dr. N. Vivekanandan, Sci. 'C'
52.	Sensors, Transducers and Vision-Based Technologies for automated Agricultural Decision Making	05 days Interdisciplinary Faculty Development Programme (FDP) titled "Smart Irrigation Systems: Design, Automation, Integration and Sustainable Practices in Agriculture" organized by Basaveshwar Engineering College, Bagalkot, Karnataka during 09-13 February, 2026.	Basaveshwar Engineering College, Bagalkot, Karnataka 09th February, 2026.	Dr. M. Selva Balan, Additional Director
53.	AI Techniques for Precision Agriculture Applications			

Sl. No.	Title	Event	Place & Date	Name of Officer
54.	CGHS, NPS and UPS, Workshop on PFMS, Preparation and Submission of Pension Papers on Bhavishya Portal, Calculation related to GPF, Gratuity & Leave Encashment, Financial Rules (FR) and Special Rules (SR) regarding Financial Administration	Induction/Probation course of Office Superintendent as per new Recruitment Rules organised MSTU, Pune during 16th January, 2026 to 27th February, 2026 at their campus	MSTU, Pune 10th February, 2026	Smt. Sony Kumari, Sr. Account Officer
55.	Implementation of SCADA	Training program on "Automation of Canals including SCADA System" organized by NWA, Pune during 19th & 20th February, 2026 at NWA through online mode	NWA, Pune 20th February, 2026	Dr. M. Selva Balan, Additional Director
56.	Flow Measurement and its Challenges	01 day Workshop on "Water Conservation and Technologies for the Future" organized by COEP Technological University, Pune on 28th February, 2026 at their campus	COEP Technological University, Pune 28th February, 2026	Dr. K. Kumar, Sci. 'E' Smt. Lata Gupta, Sci. 'D'
57.	Current Water Technologies and Challenges for the Next Decade			Shri M. S. Bist, Sci. 'D'
58.	Soil Erosion and Sediment Yield Assessment at Sub-Watershed Scale in an Ungauged Basin	Workshop on "River Basin Management-Concepts & Framework" Organized by NIT Tiruchirappalli under Cauvery initiative during 16-20 March 2026	NIT Tiruchirappalli 18th March, 2026	Dr Vinoth Kumar S., Sci. 'B'

Sl. No.	Title	Event	Place & Date	Name of Officer
59.	Satellite Derived Bathymetry Survey using AI & ML	Training programme on "Application of Artificial Intelligence (AI) and Machine Learning (ML) in Dam Safety Aspects" organized by NWA, Pune during 23-25 March 2026	NWA, Pune 24th March, 2026	Dr. M. Selva Balan, Additional Director
60.	Early Warning and Gate Operation using AI & ML			
61.	Hydraulic modeling for reservoir and appurtenant structures	Training Programme on "Integrated Water Resources Management: Modelling and Flood Decision Support Systems" organized by AISSMS college of Engineering, Pune during 23-27 March 2026	AISSMS college of Engineering, Pune 25th March, 2026	Shri R. R.Bhate, Sci. 'D'

TECHNICAL COMMITTEE MEETINGS ATTENDED

Sl. No.	Name of Committee	Date and Venue	Participants
1.	1st meeting chaired by Director, CWPRS for multi disciplinary team to study flood affected areas in Yanam Island, Pondicherry	CWC, Delhi 08th April, 2025	Dr. Prabhat Chandra, Director
2.	Meeting on over site committee for study of river Yamuna at Delhi	Online mode 08th April, 2025	Shri B. Kuldeep Malik, Sci. 'D' Shri Lalit Kumar, Sci.'B' Smt K. V. Katte, Sci.'B'
3.	Meeting and presentation on "Identification of potential erosion sites based on satellite imageries for Majuli Island along river Bramhaputra, Assam" to the TAC BB members	Online mode 09thApril, 2025	Shri P. S. Kunjeer, Sci.'D' Dr. RamyaPriya R., Sci. 'B'
4.	Meeting with Technical Specification Review Committee (TSRC) of CSMRS, New Delhi regarding review of technical specification of fully automated soil consolidation equipment	Online mode 06th May, 2025	Smt J. S. Edlabadkar, Sci. 'D'
5.	BIS WRD 09:WG 09 meeting for freeboard requirements in dams-guidelines	New Delhi 19th May, 2025	Shri M. K. Verma, Sci. 'D'
6.	Kosi high level committee meeting	Birpur, Bihar 19-21 May, 2025	Shri Arun Kumar, Sci. 'D'
7.	Kosi high level committee meeting	Birpur, Bihar 22-23 May, 2025	Shri Arun Kumar, Sci. 'D'
8.	2nd Steering Committee meeting of CWPRS	CWPRS, Pune 09th June, 2025	Dr. Prabhat Chandra, Director Shri. A. A. Purohit, Additional Director Dr. Selva Balan, Additional Director Shri Rizwan Ali, Sci. 'E' Shri Ramana Rao, Sci. 'E' Dr. (Smt.) Reshmi K. V., Joint Director Dr. J. Sinha, Sci. 'E'

Sl. No.	Name of Committee	Date and Venue	Participants
			Shri S. R. Swami, Sci. 'E' Shri M. S. Hanumanthappa, Sci. 'D' Shri M. M. Vaidya, Sci. 'D' Shri M. K. Verma, Sci. 'D' Shri Suresh Kumar. Sci. 'D' Shri P. S. Kunjeer, Sci. 'D' Shri Raghuram Singh, Sci. 'D' Shri C. Srishailam, Sci. 'D' Smt. J. S. Edlabadkar, Sci. 'D' Shri Arun Kumar, Sci. 'D' Shri S. D. Marulkar, Sci. 'D' Shri V. S. Rama Rao, Sci. 'D' Dr. Rolland Andrade, Sci. 'D' Dr. G. D. Naidu, Sci. 'D' Dr. (Smt.) Ananpurna Patra, Sci. 'D' Shri R. R. Bhate, Sci. 'D' Dr. (Smt.) Prajakta Gadge, Sci. 'D' Dr. Prakash Palei, Sci. 'D' Dr. S. Santhosh Kumar, Sci. 'C' Shri R. Vigneswaran, Sci. 'C' Shri G. A. Rajkumar, Sci. 'C' Shri P. S. Solanki, Sci. 'C' Shri Iyer Rajesh Raman, F.O.
9.	Meeting of Coastal Zone Water Management Sectional Committee under WRD 28 and the mandatory workshop for WRD TC members	Chennai 10-11 July, 2025	Shri A. A. Purohit, A.D. Shri V. K. Shukla, Sci. 'D'
10.	Meeting of ASCI report with Apex Committee	CWPRS, Pune 23rd July, 2025	Dr. Prabhat Chandra, Director

Sl. No.	Name of Committee	Date and Venue	Participants
11.	40th meeting of NCSDP	CWC, New Delhi 24th July, 2025	Dr. Prabhat Chandra, Director
12.	Mandatory workshop for technical committee members on XMLisation of standards and online standard development, BIS, New Delhi	Bengaluru 29th July, 2025	Dr. K. Kumar, Sci. 'D'
13.	29th meeting of WRD 03 Sectional Committee	Online mode 19th August, 2025	Shri G. A. Panvalkar, Sci.'C'
14.	23rd Meeting of WRDC	Manak Bhavan, New Delhi 06th August, 2025	Dr. Prabhat Chandra, Director
15.	26th meeting of Reservoirs and Lakes Sectional Committee (WRD 10)	Online mode 29th October, 2025	Dr. V. M. Prabhakar, Sci. 'D' Shri Nishchay Malhotra, Sci. 'B'
16.	30th meeting of WRD 01 sectional committee meeting chaired by Director, CWPRS	Hybrid mode 17th November, 2025	Dr. Prabhat Chandra, Director Shri B. Suresh Kumar, Sci 'D' Shri Shrikanth Sampath, Sci 'C'
17.	ISO/TC/113/SC 2 meeting	Hybrid mode 20th November, 2025	Shri B. Suresh Kumar, Sci 'D'
18.	Kosi high level committee meeting	Birpur, Bihar 20-23 November, 2025	Shri S. G. Majunatha, Sci. 'E' Shri Arun Kumar, Sci.'D'
19.	19th meeting of Ports, Harbour and ffshore installations sectional committee CED 47 of BIS	Online mode 27th November, 2025	Shri A. A. Purohit, Additional Director
20.	TAC meeting of Farakka Barrage project	Online mode 23rd December, 2025	Shri Arun Kumar, Sci.'D' Smt Jotsna Ambekar, Sci.'B'
21.	1st meeting of International conference on Dam Safety	Online mode 02nd January, 2026	Dr. Prabhat Chandra, Director
22.	BIS Sectional Committee meeting of WRD-09 regarding the discussion of the comments of CWPRS on BIS code on Dam Break Analysis	Online mode 06th January, 2026	Shri S. D. Marulkar, Sci.'D'
23.	BIS Sectional Committee :WRD 08 meeting (Foundation and Foundation Treatment)	Online mode 19th January, 2026	Smt. J. S. Edlabadkar, Sci. 'D'
24.	Meeting with Indian National Committee on Groundwater (INCGW)- Collaborative study with NGRI on Salinity Intrusion	Online mode 28th January, 2026	Dr. Rolland Andrade,Sci.'D'

Sl. No.	Name of Committee	Date and Venue	Participants
25.	1st meeting of revised Indian National Committee on Surface Water(INCSW)	CWPRS, Pune 02nd February, 2026	Dr. M. Selva Balan, Additional Director Dr. (Smt.)Reshmi K. V., Joint Director Smt J. S. Edlabadkar, Sci. 'D' Shri Jitesh Vyas, Sci. 'C' Shri Nishchay Malhotra, Sci.'C'
26.	Standing Advisory Committee (SAC) of DoWR chaired by AS & MD, NWM	Online mode 17th February, 2026	Dr. Prabhat Chandra,Director
27.	1st meeting of the working group for the preparation of PFR/DPR for construction of retention structure in LhonalVally for GLOF Risk Mitigation	Online mode 05th March, 2026	Shri P. S. Kunjeer, Sci. 'E'
28.	Meeting for National Committee on Seismic Design Parameters (NCSDP)	CWC, New Delhi 16th March, 2026	Dr. SumanSinha,Sci. 'C' Shri S. Selvan, Sci.'C'

TRAINING
PROGRAMS ATTENDED

Sl. No.	Name of Committee	Date and Venue	Participants
1.	Training program for BIS designated experts involved in ISO & IEC projects organized by WRD, BIS, New Delhi	WRL Mumbai 15th April, 2025	1
2.	Symposium on "Dam Safety" organized by National Dam Safety Authority (NSDA)	New Delhi 07th April, 2025	3
3.	Training program on "Basic Course on Artificial Intelligence (AI) and Machine Learning (ML)" organized by Regional Training Division, Geological Survey of India Regional Training Division, Central Region, Nagpur	26th May -03rd June, 2025	1
4.	Induction Training of "Newly Recruited Officers" organized by CWPRS	CWPRS, Pune 19-23 May, 2025	13
5.	Workshop on "Prevention, Prohibition and Redressal of Sexual Harassment of Women at Work Place" organized by ISTM, New Delhi in offline mode	ISTM, New Delhi 09-10 June, 2025	2
6.	Mandatory Training Stage-1 of MCTP Phase-I on " Foundation Course on Machine Learning using Python" for ISS officers	IIT Madras 16-20 June, 2025	1
7.	Training on "Faculty Development Program" organized by NWA, Pune	NWA, Pune 16-20 June, 2025	3
8.	Training on "Introduction to Google Earth Engine & its Application in Water Resources Management" organized by NWA, Pune	NWA, Pune 23-27 June, 2025	2
9.	Training program on "Artificial Intelligence and Machine Learning (AI/ML)" organized by NWA, Pune	NWA, Pune 30th June -04th July, 2025	28
10.	International Workshop on "Connecting and Empowering Research: Open Access, Open Data and Research Metrics" organized by All India Shri Shivaji Memorial Society's (AISSMS) College of Engineering, Pune in collaboration with INFLIBNET Centre, Gandhinagar, Gujarat	AISSMS, Pune 02-04 July, 2025	1
11.	Training Program on " Database Management and Data Visualization" for In-service ISS officers organized by NSSTA, Greater Noida at their campus in collaboration with Data Informatics & Innovation Division (DIID), MoSPI	NSSTA, Greater Noida 07-11 July 2025	1
12.	Training programme on "SMS 13.3 Software" organized by M/s Aditi Infotch	CWPRS, Pune 7-11 July 2025	50

Sl. No.	Name of Committee	Date and Venue	Participants
13.	In house Training on "Safety at Workplace"	CWPRS, Pune 9 July, 2025	30
14.	Training on "DamInstrumentation" organized by NWA, Pune	NWA, Pune 14-18 July, 2025	4
15.	Training program on "Python-Essentials for Hydrology"	NIH, Roorkee 14-18 July, 2025	1
16.	In house Training on"New Emerging IT Technology and ICT activity"	CWPRS, Pune 16 July, 2025	21
17.	Training schedule on "CCS (Pension Rules) 2021" under various modules from July 2025 to September 2025	Mumbai 21 July, 2025	1
18.	Training Course on "Hydrological Analysis and Operation of Reservoir Systems' organized by NIH, Roorkee	NIH, Roorkee 21-25 July, 2025	1
19.	Webinar on "Selecting Your Water Quality Field Instrument" organized by Xylem Environmental Solutions	Online mode 24 July, 2025	2
20.	हिंदी कार्यशाला।	CWPRS, Pune 27 July, 2025	78
21.	Training program on "e-Governance Activities of CWPRS" scheduled for Group B and Group C employees of CWPRS	CWPRS, Pune 30-31 July, 2025	39
22.	Training on "e-Governance activities at CWPRS"	CWPRS, Pune 04-05 August, 2025	38
23.	Training Programme on "Emergency Action Plans for Dams" organized by NWA, Pune	NWA, Pune 05-08 August, 2025	1
24.	02 Weeks Training Program on "Engineering Seismology" organized by IIT Dhanbad	IIT Dhanbad 05-17 August, 2025	1
25.	Training on "e-Governance activities at CWPRS" for Group-A Scientists	CWPRS, Pune 06 August, 2025	40
26.	Training on "E-governance activities at CWPRS"	CWPRS, Pune 12-13 August, 2025	39
27.	Training on "Vigilance Mattersand Disciplinary Proceedings" under Training Modules Schedules from July 2025 to September 2025	Regional Training Center, Mumbai 14 August, 2025	6
28.	In-house Training course on "Instrumentation for Hydraulic Parameters Measurement"	CWPRS, Pune 18 August, 2025	26

Sl. No.	Name of Committee	Date and Venue	Participants
29.	05 Days Training Program on "Strategic Thinking, Innovation Mindset and Design Thinking for Leading Scientific Research Organizations" organized by Centre for Organization Development (COD), Hyderabad and sponsored by DST	COD Campus Hyderabad 18-22 August, 2025	2
30.	Training Program on "Dam Safety Evaluation Using Geophysical Techniques" organized by CSRMS, New Delhi	New Delhi 21-22 August, 2025	4
31.	Training on "e-Governance activities at CWPRS" during	CWPRS, Pune 25-26 August 2025	38
32.	Training on "Flow-3D HYDRO Software "	CWPRS, Pune 18-22 August, 2025	27
33.	E-Learning Course on "Machine Learning for Official Statistics" organized by Statistical Institute for Asia and the Pacific (SIAP) of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)	11th August to 26 September2025.	1
34.	5th Foundation Training Programme (FTP) (4th Batch) for Medical Officers of GDMO sub-cadre of CHS "AAROHAN"	1st September 2025 - 26 September 2025.	1
35.	02 Days Training Program on "Mastering Rock Slope Design and Analysis with Advanced Geotechnical Software Toolsfrom Rocscience" jointly organized by Central Board of Irrigation & Power (CBIP) and International Society for Rock Mechanics and Rock Engineering (ISRM India) in association with Rocscience	CBIP, New Delhi. 02 and 03 September, 2025	2
36.	Training on "NPS and UPS" under Training Modules Schedules from July 2025 to September 2025	Regional Training Center, Mumbai 4 September, 2025	9
37.	04 Days Training Program on "Laboratory Quality Management System & Internal Audit as per ISO 17025:2017 & NABL requirements" organized by HMCI division, CWPRS	CWPRS, Pune 08-11 September, 2025	32
38.	Online Training Program on "Introduction to Python Programming using Jupyter Notebooks (with an introduction to Google Collab)" organized by NWA, Pune through theire-learning platform	Online mode 08-19 September, 2025	21

Sl. No.	Name of Committee	Date and Venue	Participants
39.	05 Days Training Programme on "Science & Technology: Global Development and Perspectives" for mid-career and senior Sci.s, Sci.-administrators and technologists organized by National Institute of Advances Studies (NIAS), Bengaluru with support of DST during	(NIAS), Bengaluru 15-19 September, 2025	2
40.	05 Days Training Program on "Hydrology of Ungauged Basins" rganized byNIH Roorkee	NIH Roorkee 15-19 September, 2025	2
41.	Training on "TA, LTC, Leave Rules" under Training Modules Schedules from July 2025 to September 2025	Regional Training Center, Mumbai 15-16 September, 2025	4
42.	Training on "Cultivating IKIGAI in work/life culture" under Training Modules Schedules from July 2025 to September 2025	Regional Training Center, Mumbai 17th September, 2025	4
43.	Training Programme "Sustainable Water Resources Management under Uncertain Future Climate Conditions"	CWRDM, Kozhikode, Kerala 22-26 September, 2025	1
44.	02 Days Training Course on "Construction Material Investigations and Quality Control for Concrete Hydraulic Structures" organized by CSMRS, New Delhi	CSMRS, New Delhi 25-26 September, 2025	4
45.	Training programme on"Application of Remote Sensing & Geographical Information Systems in Water Resources " organized by NWA, Pune	NWA, Pune 22nd September - 1st October, 2025	4
46.	Training programme on "Introduction to Python Programming and Applications in Water Resources Sector" organized by NWA, Pune	NWA, Pune 06-07 October, 2025	5
47.	Training program on "Applications of Hydro-geophysics and numerical solute transport modeling for groundwater management" organized by NIH, Roorkee	NIH, Roorkee 13-17 October, 2025	1
48.	Training program on "InSAR" organized by Swiss Agency for Development and Cooperation (SDC) as a part of SCA-Himalayans Project	Online mode. 14th October, 2025	4
49.	Training course on "Instrumentation and Monitoring for Dam Safety" organized by CSMRS, New Delhi	CSMRS, New Delhi 30 - 31 October 2025	3
50.	Training program on "Microplastics in the Marine Environment, from collection to characterization" jointly organized by Centre for Ocean Research (COR) & National Facility for Coastal and Marine Research (NFCMR)	Satyabhama Institute of Science & Technology (Deemed to be University), Chennai 03-07 November, 2025	1

Sl. No.	Name of Committee	Date and Venue	Participants
51.	Workshop on "Advanced Numerical Modeling for Geotechnical Engineering"organized by Indian Institute of Technology Kanpur in association with IGS Kanpur Local Chapter	Indian Institute of Technology Kanpur 06-08 November, 2025	2
52.	Training course on Innovative Instrumentation, Comprehensive Calibration and Testing Facilities and Field Demonstration for Hydrological Parameters	CWPRS, Pune 12-13 November, 2025	37
53.	तकनीकीहिन्दी कार्यशाला का आयोजन किया गया ।	केन्द्रीय जल और विद्युत अनुसंधान शाला, खड़कवासला, पुणे 26 नवम्बर, 2025	103
54.	Training program on "Conduct Rules & Preventive Vigilance (OTP-C-PV-04)"organized by ISTM, New Delhi	ISTM, New Delhi 01-02 December 2025.	1
55.	Training program on "Quality Assurance (Concrete & Masonry Dams)" organized by CPMU DRIP, CWC in collaboration with Tamil Nadu WRD	IMTI, Trichy, Tamil Nadu 10-11 December, 2025	2
56.	Workshop on "Competencies of Librarians in the era of AI" organized by Pune University Library and Information Science Alumni Association (PULISAA)	Savitribai Phule Pune University 17th January 2026	1
57.	Workshop on "Coastal Management and Information System (CMIS)"organised by National Institute of Oceanography (NIO)	Goa 30-31 January, 2026	2
58.	Training program on "Geodata Processing using Python and Machine Learning" organized by IIRS-ISRO	Online mode 09-20 February, 2026	1
59.	Advance level training program on "Integrated Glacial Lake Outburst Flood (GLOF) Mapping & Modeling" organized by National Institute of Hydrology, Roorkee and sponsored by National Water Mission	NIH, Roorkee 16-20 February, 2026	1
60.	Training programme on "Hydrological Modelling using Free tools" organized by NWA, Pune	NWA, Pune 16-21 February, 2026	2
61.	Training program on "Measuring the Earth Precisely: Advances in Geodesy & GNSS" organized by Maulana Azad National Institute of Technology Bhopal during 26-28 February, 2026 at their campus	Maulana Azad National Institute of Technology Bhopal 26-28 February, 2026	2

Sl. No.	Name of Committee	Date and Venue	Participants
62.	Training program on "Bhuvan Overview" organized by Bhuvan Geoportal and Web Services Area	NRSCI.ISRO, Hyderabad 09-11March, 2026	2
63.	Training program on "Building Local Resilience in a Changing Climate" organized by CDM in collaboration with DST for Women Sci.s & Technologists working in Government	LBSNAA, Mussoorie 09-13 March, 2026	2
64.	Training programme on "Design Flood Estimation, Flood Routing EAP and Resevoir Rule Curves" organized by International Centre of Excellence for Dams ICED	IIT Roorkee 23-26 March, 2026	1
65.	Training Program on "Instrumentation and Control System in Physical Hydraulic Model"	CWPRS,Pune 10-11 March, 2026	24
66	हिंदीसंगोष्ठी २०२६'का आयोजन को किया गया ।	CWPRS 27 मार्च, 2026	56
67.	Induction training program for newly recruited staff of CWPRS conducted	CWPRS,Pune 23-27 March 2026	25

TRAINING/ CONFERENCE SEMINAR ORGANIZED

SR. No.	Title
1	Induction training of "Newly Recruited Officers" organized by CWPRS during 19-23 May, 2025
2	Training course on "Studies and Investigations Necessary during Rehabilitation of Dams" during 14-15 July, 2025
3	Training programme on "Physical and computational modeling techniques for River, Reservoir and its appurtenant structures" during 29-31 July, 2025
4	In house Training on "Safety at Workplace" organized on 9th July 2025 at CWPRS
5	In house Training on "New Emerging IT Technology and ICT activity" organized on 16th July, 2025 at CWPRS
6	Training programme on "SMS 13.3 Software" organized at CWPRS on 07-11 July, 2025
7	**केन्द्रीय जल और विद्युत अनुसंधान शाला, खड़कवासला, पुणे में 27 जुलाई, 2025 को हिन्दी कार्यशाला का आयोजन किया गया**
8	In house training programme on "e-Governance Activities of CWPRS" organized by CWPRS during 30-31 July, 2025
9	Training program in relevant trade (e.g. Mason, Mechanist, Carpenter, Instrument Mechanics etc.) for promotion from Craftsman-I (Highly Skilled) to Master Craftsman (Group 'B', Non Gazetted) during 07 July-01 August, 2025
10	Training on "e-Governance activities at CWPRS" during 04-05 August, 2025
11	Training on "e-Governance activities at CWPRS" on 06th August, 2025
12	Training on "e-Governance activities at CWPRS" during 12-13 August, 2025
13	Training course on "Instrumentation for Hydraulic Parameters Measurement" on 18th August, 2025
14	Training on "Flow-3D HYDRO Software" at CWPRS during 18-22 August, 2025
15	Training on "e-Governance activities at CWPRS" during 25-26 August, 2025
16	Online Training Programme on "Rainfall runoff modeling for ungauged catchment" conducted during 09-10 September, 2025
17	Online Training Programme on "Advanced Diagnostic Techniques for Assessment and Control in Resolving Seepage problem in Hydraulic Structures" conducted during 15-16 September, 2025

SR. No.	Title
18	04 Days Training Program on "Laboratory Quality Management System & Internal Audit as per ISO 17025:2017 & NABL requirements" organized by HMCI division, CWPRS during 08-11 September, 2025 at CWPRS, Pune
19	Stakeholder workshop on "Role of CWPRS in Dam Safety and Rehabilitation - Building Strategic Partnership" on 29th October, 2025
20	Training programme on "Innovative instrumentation, calibration & testing facilities and field demonstration for hydrological parameters" during 12-13 November, 2025
21	**दिनांक नवम्बर, 2025 को'तकनीकी हिन्दी कार्यशाला' का आयोजन किया गया**
22	National workshop on "Instrumentation of existing dams" organized by CWPRS during 10-12 December, 2025
23	National workshop on "PreciSence 2026 - Reliable Hydrometric Data through Precise Sensing" organized by CWPRS during 22-23 January, 2026
24	Two-day Online Technical Training Programme on "Risk Assessment, Surveillance & Rehabilitation of Hydraulic Structures" from 5-6 February, 2026
25	Two-day online training course on "Coastal Erosion & Sustainable Coastal Protection Measures" on 12-13 February, 2026
26	Training Programme on Dam Break Analysis and Emergency Action Planning conducted on 25th February, 2026
27	Training program on "Calibration and Testing of Hydro meteorological Equipment" for field engineers of the Jal Shakti Vibhag, Himachal Pradesh during 16-18 March, 2026
28	In-house training on "Instrumentation and Control Systems in Physical Hydraulic Models" during 10-11 March, 2026
29	Induction training program for newly recruited staff of CWPRS during 23-27 March, 2026
30	**'हिंदी संगोष्ठी' का आयोजन 27 मार्च, 2026 को किया गया**

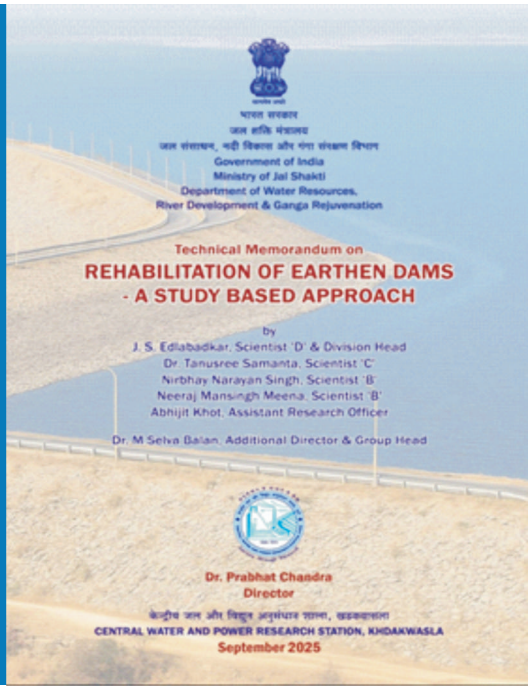
TECHNICAL MEMORANDUM

"Rehabilitation of earthen dams - A study-based approach"

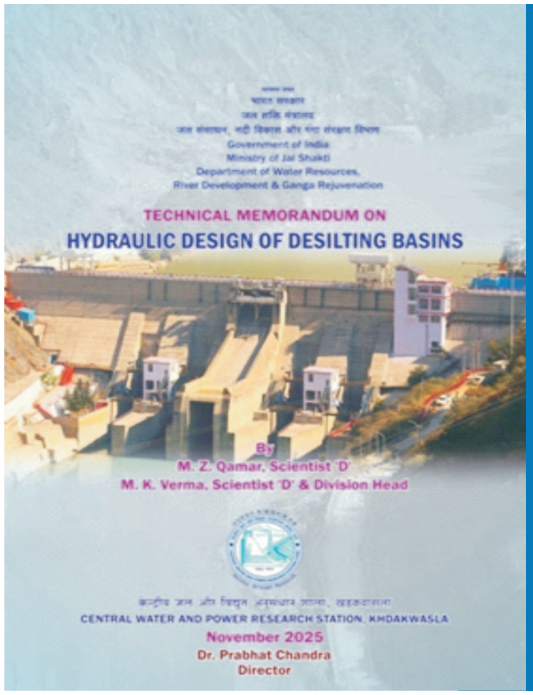
The technical memorandum provides a comprehensive guide for a study based approach for rehabilitation of earthen dams. It covers in great detail various aspects of earthen dam rehabilitation including significant case studies.

The memorandum emphasizes upon scientific assessment of the structure by geotechnical studies, over adopting blanket solutions for structural safety enhancement and seepage mitigation.

The publication is expected to be a useful resource document for dam owners and technical personnel dealing with rehabilitation of earthen dams.



"Hydraulic Design of Desilting Basins"



The technical memorandum presents a structured approach for the hydraulic design and performance evaluation of desilting basins in hydropower and water-conductor systems. It integrates empirical methods with insights from physical modelling and Computational Fluid Dynamics (CFD), while incorporating enhanced guidance on silt flushing tunnels (SFTs).

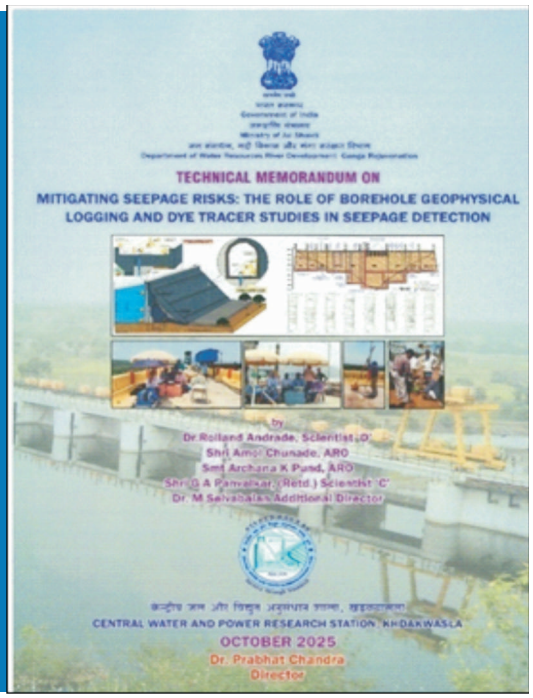
The memorandum emphasizes project-specific design considerations, including flow velocity, sediment characteristics, basin geometry, and flushing efficiency, rather than relying solely on generalized criteria.

The publication is expected to be a useful resource document for hydropower plant ownersand technical personneldealing with the construction and maintenance of hydropower plant.

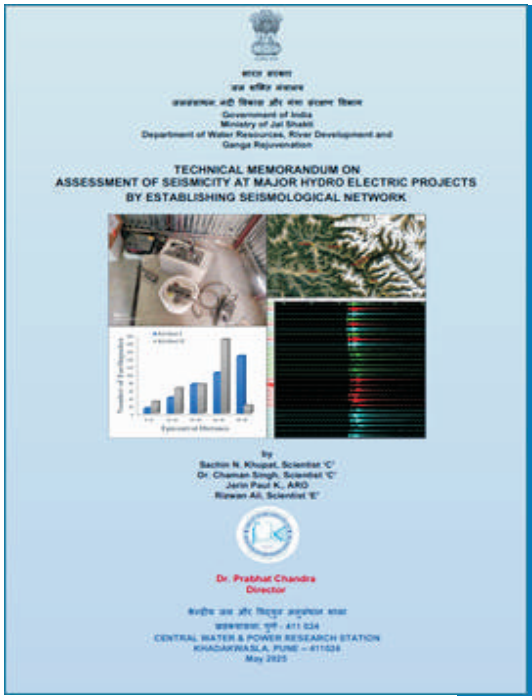
"Mitigating Seepage Risks: The Role of Borehole Geophysical Logging and Dye Tracer Studies in Seepage Detection"

The technical memorandum portrays a general introduction about the various aspects of dam safety and rehabilitation, the basics of distress and its causes, consequences of distress in concrete, masonry and embankment dams with various causes of seepage through monitoring dams (i.e. Earthen, masonry and concrete). It also elaborates the site selection criteria to carryout Borehole Logging and Tracer investigation to determine various in-situ engineering properties and path of seepage through body and foundation of Dam.

This memorandum is expected to be of great help to practicing engineers, researchers, scientists, consultants and other authorities of Water Resources Projects planning and execution to identify and mitigate seepage problems related to dam safety and rehabilitation.



"Assessment of Seismicity at Major Hydroelectric Projects by establishing Seismological Network"



This technical memorandum explains the importance of seismic monitoring of pre and post construction of the hydraulic structures such as dams and river valley projects. It further explains the seismic instrumentation involved in setting up a seismic network around the project sites.

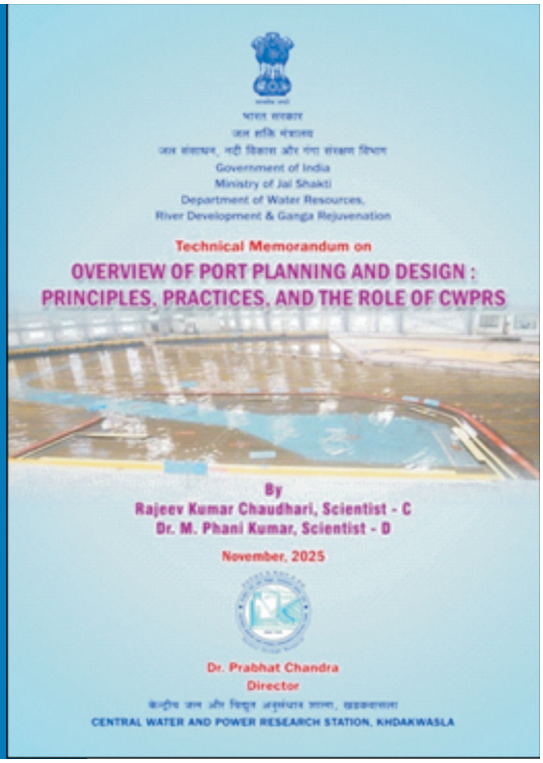
This publication is expected to serve as a valuable reference document for dam owners, engineers, and technical personnel involved in the rehabilitation, maintenance, and safety assessment of dams.

"Overview of Port Planning and Design: Principles, Practices, and the Role of Cwprs"

The technical memorandum significantly provides a comprehensive reference framework for port and harbour planning, design, and hydraulic assessment based on the extensive experience of CWPRS in coastal and port engineering.

The memorandum emphasizes importance of scientific and engineering-based approaches in port and harbour planning and design, with particular focus on hydraulic investigations, coastal processes, harbour tranquillity, sedimentation, shoreline stability, and operational safety. It also emphasizes the pivotal role of CWPRS in supporting the sustainable development of maritime Ports and other Coastal infrastructure in India.

The publication is expected to be a valuable guide for engineers, planners, researchers, and professionals involved in the development of major and minor ports, passenger terminals, and fishing harbours across India.



"Qualitative Assessment of Civil Structures"

The technical memorandum provides a comprehensive guideline for the qualitative assessment of civil structures using various Non-Destructive Testing (NDT) methods. It explains in detail multiple NDT techniques along with significant case studies demonstrating their practical applications. The memorandum emphasizes scientific evaluation of structural condition through appropriate NDT methodologies.

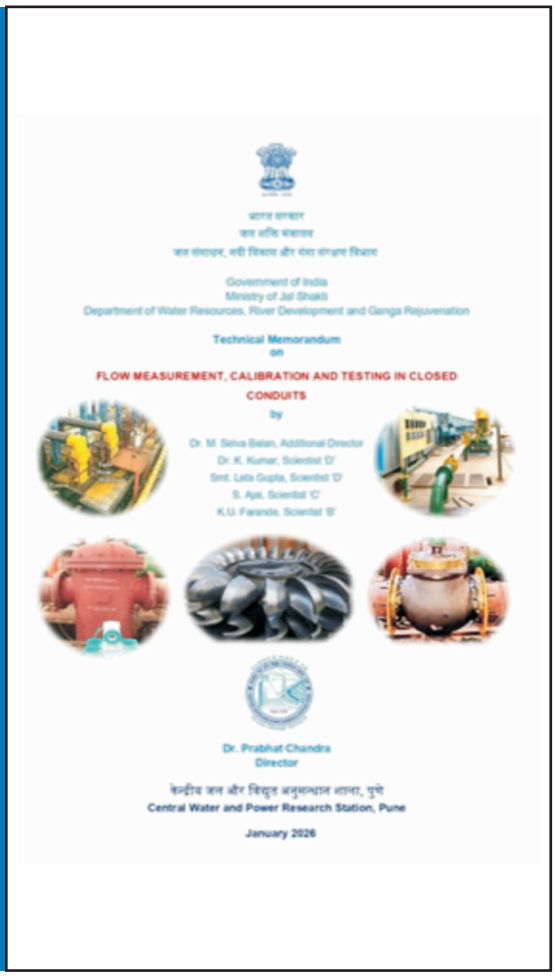
This publication is expected to serve as a valuable reference document for dam owners, engineers, and technical personnel involved in the rehabilitation, maintenance, and safety assessment of dams.

"Flow Measurement,Calibration and TestingIn Closed Conduits"

This Technical Memorandum presents the principles, methodologies, facilities, and practical challenges associated with the calibration and testing of closed conduit flow elements. It also emphasizes the importance of flow metering for the effective implementation of various national schemes of the Ministry of Jal Shakti, including the JalJeevan Mission, NamamiGange Programme, AtalBhujal Yojana, National Water Mission, and other allied initiatives.

This memorandum consolidates laboratory-based primary calibration techniques, field-level secondary calibration practices, pump testing methodologies, and installation-related issues that affect measurement accuracy and custody transfer.

The publication serves as a valuable resource document for engineers, utilities, and implementing agencies involved in water supply, irrigation, hydropower, and industrial water systems. It reinforces the importance of appropriate meter selection, proper installation, periodic calibration, and uncertainty evaluation to ensure reliable flow measurement and effective water governance.



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